

# Correlation between cell phone usage and deterioration of semen quality



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## OBJECTIVES

Results concerning potential adverse effects of electromagnetic waves (EMW) on different body organs have been reported. Some studies have shown detrimental impact of EMW emitted by cell phones on semen quality, regarding sperm count, motility, morphology and viability, as well as genotoxic effects depending on the duration of exposure. The objective of this retrospective study was to determine whether cell phone usage has an undesirable influence on the male reproductive system.

## MATERIALS AND METHODS

We examined 2110 male partners, in couples with a lack of offspring, attending our andrology unit over a period of 15 years (1993-2007). According to their cell phone usage, participants were stratified into two groups, namely cell phone users (group A, 991 subjects) and non-cell phone users (group B, 1119 subjects). Semen samples were collected by masturbation after an abstinence period of 5+/-2days. Semen analysis was performed according to WHO guidelines. Serum free testosterone, follicle stimulating hormone (FSH), luteinizing hormone (LH) and prolactin were collected from all patients. Statistical analysis was done by multivariate analysis of variance (MANOVA).

## RESULTS

The mean age was 31.8 years (SD +/-6.6 years). All parameters assessed showed a negative correlation with the use of cell phones. A statistically significant difference was noted in sperm morphology. In participants of group A, 68.0% of the spermatozoa featured a pathological morphology, compared to only 58.2% in the subjects of group B ( $p<0.0001$ ). Teratozoospermia was diagnosed in 45.3% of cell phone users vs. 25.4% of non-cell phone users. According to our data, this correlation is irrespective of participant's age. The proportion of rapid progressive motile sperms was significantly decreased in group A, namely 24.0% vs. 25.2% in group B ( $p<0.01$ ). No statistically significant difference was detected regarding the sperm count. Cell phone users showed a mean sperm count of 62 million spermatozoa/mL vs. 65.7 million/mL in group B ( $p<0.186$ ). Hormone values among the two groups demonstrated a statistically significant difference regarding testosterone and luteinising hormone, whereas cell phone users (group A) had higher testosterone and lower luteinising hormone levels than non-cell phone users (group B). There was no statistical significant difference regarding follicle stimulating hormone and Prolactin hormone values.

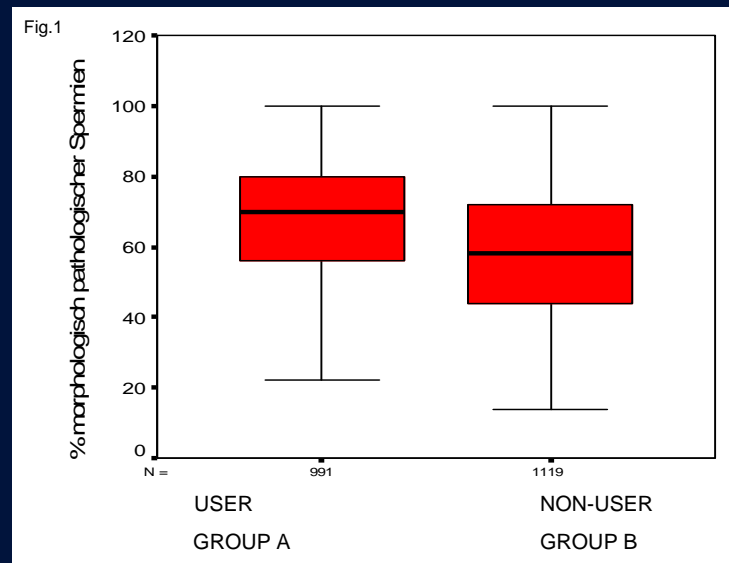


Fig. 1 : pathological morphology of spermatocytes of the group User (A) compared to the Non-User-group (B) ( $p<0.0001$ )

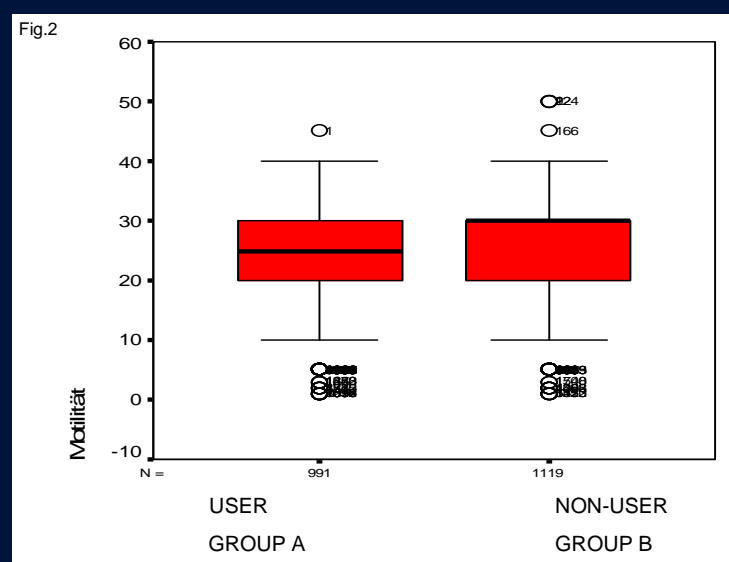
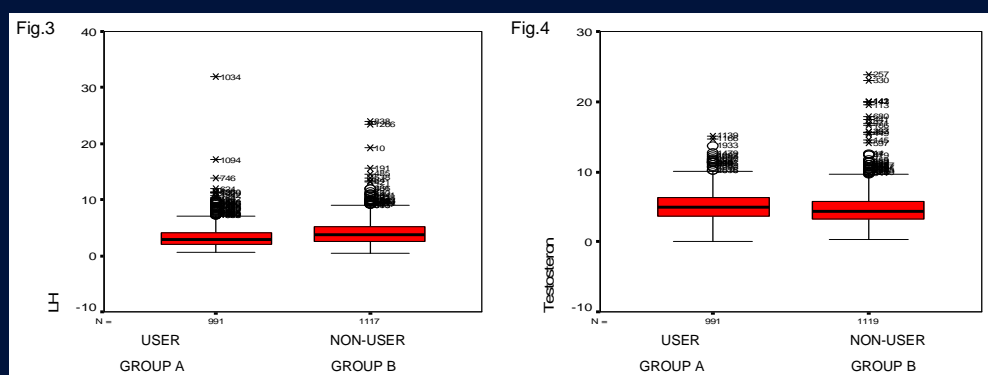


Fig. 2 : mobility of spermatocytes of the group User (B) compared to the Non-User-group (A) ( $p<0.001$ )

Fig. 3 and 4: Hormone values (LH- left, Testosterone- right) of the group User (A) compared to the Non-User-group (B) ( $p<0.0001$ )



## CONCLUSIONS

In this retrospective analysis, the usage of cell phones was associated with a statistically significant deterioration of semen quality, concerning morphology and motility. Further studies analyzing the underlying mechanisms are highly recommended.