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Relationship between cell phone use and human fertility: an observational study

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Objective: Cell phones emit electromagnetic waves which are reported to have some harmful health effects. However, there is scant information on the actual impact of radiation emitted by cell phone on the male reproductive system. The objective of our study was to assess the potential adverse effects if any of cell phone use on the various markers of semen quality.
Design: Prospective study at a male infertility diagnostic clinic.
Materials and Methods: Study included 364 males undergoing infertility evaluations from September 2004 to October 2005. Subjects were divided into 3 groups according to the sperm count: Group A: Sperm count from 1 -10 million/ mL; Group B: Sperm count from 10 -20 million/mL; Group C: Sperm count greater than 20 million/mL. The subjects were further subdivided according to the frequency of their cell phone usage: no use (n = 40), mild (4 hours/day, n = 82). Comparisons between the four groups were performed using one-way analysis of variance (ANOVA).
Results: The mean motility, viability and morphology were significantly different in all three groups ($P < 0.05$) (Table 1). However, the difference in mean sperm count between the three groups or between different levels of cell phone usage was not significantly different ($P > 0.05$). Among the groups, the mean motility, morphology and viability were significantly different among the severe oligospermic patients (Group A) and normospermic (Group C) (Table 2).
Conclusion: The use of cell phone by men undergoing infertility evaluation is strongly associated with a decrease in sperm quality. The effects do not depend on the initial semen quality of the subjects. Large scale studies are needed to identify the mechanism involved in the reduction of semen quality.
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Table1: Comparison of sperm parameters in normospermic patients according to their cell phone usage

Cell phone usage	Count (spermatozoa/ML) (Mean ± SD)	Motility (%) (Mean ± SD)	Viability (%) (Mean ± SD)	Morphology (%) (Mean ± SD)
No use (n = 40)	85.89 ± 35.56	67.80 ± 6.16	71.78 ± 6.75	40.33 ± 13.06
Less than 2 hours/day (n = 96)	75.76 ± 36.89	65.72 ± 6.20	69.44 ± 6.26	32.43 ± 11.87
2 - 4 hours/day	71.29 ± 50.93	56.80 ± 9.55	60.79 ± 7.47	22.98 ± 10.15

(n = 81)				
Greater than 4 hours/day (n = 82)	66.20 ± 38.99	47.80 ± 15.74	51.20 ± 15.53	20.54 ± 10.51
	P = 0.0884	P < 0.0001	P < 0.0001	P< 0.0001

Table 2: Mean difference in sperm motility, morphology and viability between Groups A & C

Cell phone use > 4 hours/day	Mean difference	P-value
Motility	16.455	<0.001
Morphology	11.437	<0.001
Viability	18.057	<0.001
Cell phone use < 2 hours/day	Mean difference	P-value
Motility	21.119	<0.001
Morphology	17.027	<0.01
Viability	22.038	<0.001

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