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Smartphone Light Exposure and Sperm Quality in Palestinian Men: Exploring Nighttime, Daytime, and Lifestyle Influences.

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Background: A notable decline in sperm quality among Palestinian men, characterized by reduced count, motility, and morphology, has raised concerns about its impact on reproductive health and future generations. The widespread use of smartphones and their blue light emission, especially at night, is suspected to disrupt the circadian rhythm and hormonal balance, crucial for sperm production

Objective: This study explores the potential link between smartphone light exposure and sperm parameters in Palestinian men, filling a crucial knowledge gap about the influence of smartphone use on male fertility.

Methods: A group of 100 Palestinian men participated in this study by completing a detailed electronic questionnaire and providing semen samples. The assessment focused on various sperm parameters including count, motility (categorized as rapid progressive, slow progressive, non-progressive, immotile), and morphology (normal, tapered head, round head, small head, large head, pinhead, amorphous head, duplicate forms, neck defect, tail defect). Additionally, data regarding their smartphone usage habits, sleep quality, and consumption of energy drinks were collected.

Results: A notable correlation was found between nighttime smartphone use and decreased sperm motility. Specifically, increased use of smartphones before sleep was linked to higher non-motility rates (frequency 0.013.15, non-frequency=5). Moreover,



greater pre-sleep smartphone engagement was associated with increased occurrences of sperm with small heads (frequency 0.024, 6, non-frequency=1) and tapered heads (frequency 0.005, 9, non-frequency=4).

Conclusions: The study establishes a significant relationship between night-time smartphone light exposure and detrimental changes in sperm quality, particularly affecting motility and morphology. These findings highlight the importance of considering lifestyle habits, like smartphone use and energy drink intake, in discussions surrounding male reproductive health.

Keywords: Smartphone, light exposure, sperm, reproductive, emission, motility.