

# Exploring the Relationship between Age, BMI, and Human Sperm Parameters: A Comprehensive Analysis"

Bahareh Nikouzar<sup>1</sup>, Marziyeh Tavalaei<sup>1</sup>, Ali Nasresfahani<sup>2</sup>, Kosar Pashaei<sup>2</sup>, Paria Behdarvandiyan<sup>1</sup>, Mohammad Hossein Nasr-Esfahani<sup>1,2</sup>

<sup>1</sup>Department of Animal Biotechnology, Reproductive Biomedicine Research Center, Royan Institute for Biotechnology, ACECR, Isfahan, Iran

<sup>2</sup>Isfahan Fertility and Infertility Center, Isfahan, Iran.

## Abstract

**Background:** Male age, body mass index (BMI), and sperm parameters are significant factors that can affect male fertility. Therefore, in this retrospective cohort study, approximately 1000 men were assessed to determine the correlation between sperm parameters, male age, and BMI.

**Methods:** Semen parameters were evaluated according to the World Health Organization guidelines (2010) protocol, and BMI was calculated as the person's weight in kilograms divided by the square of their height in meters. Pearson's correlation coefficient was used to examine the correlation between the study variables, with a significance level of  $P < 0.05$  considered statistically significant.

**Results:** Our analysis revealed a significant positive correlation between male age and BMI ( $p=0.03$ ); however, no significant correlation was found between BMI and sperm parameters. Furthermore, we observed a negative correlation between male age and semen volume ( $p=0.02$ ), and abnormal morphology ( $p=0.03$ ).

**Conclusion:** Male age was positively correlated with BMI and negatively correlated with semen volume and abnormal morphology, consistent with previous studies that suggested ageing as a risk factor for male infertility. However, the analysis did not find a significant correlation between BMI and sperm parameters, which is surprising given the previous research linking obesity to poor sperm quality and fertility. Future research should focus on understanding the underlying mechanisms of age-related changes in semen quality and identifying interventions or treatments to improve sperm health in older men.

**Key words:** Sperm motility, count, morphology, male age, Body mass index.