



THE IMPACT OF DIET, PHYSICAL ACTIVITY, AND VITAMIN SUPPLEMENTATION ON INFERTILITY CONNECTED WITH OVULATORY DISORDERS

DEVELOPMENT OF SCIENTIFIC COOPERATION IN REPRODUCTIVE MEDICINE RESEARCH

24-25 MAY 2024
WARSAW

Magdalena Skowrońska¹, Angelika Buczyńska², Aleksandra Wiatr², Aleksandra Wenta³, Kamila Gryko³, Michał Pawłowski⁴, Monika Zbucka-Krętowska³, Robert Milewski⁴

¹Doctoral Studies, Medical University of Białystok

²Department of Endocrinology, Diabetology and Internal Diseases, Medical University of Białystok

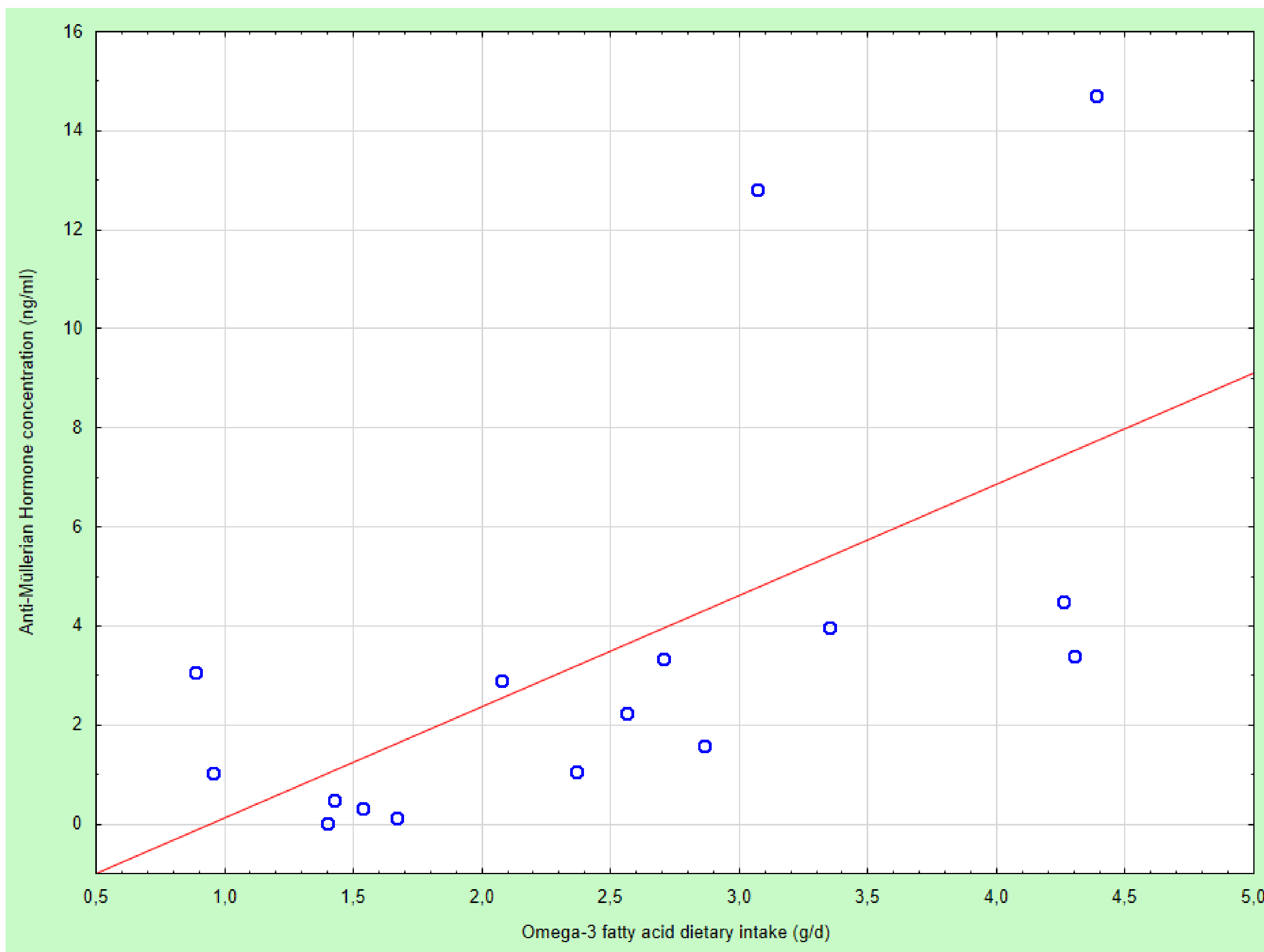
³Department of Gynecologic Endocrinology and Gynecology of the Developmental Age, Medical University of Białystok

⁴Department of Biostatistics and Medical Informatics, Medical University of Białystok

Anti-Müllerian hormone is a recognized marker of a woman's remaining reproductive potential. It is used to monitor ovarian reserve, which reflects the ability of the ovary to produce fertile eggs. Lower AMH results indicate reduced ovarian reserve, i.e., fewer ovarian follicles available. On the other hand, elevated blood levels are seen in women with polycystic ovary syndrome (PCOS). This indicates pathological production of this hormone by a large number of ovarian follicles. Progesterone is important when trying to conceive: it stimulates the uterus to secrete substances needed for embryo implantation and development, affects the endometrium, preparing it for embryo implantation, and helps embryo implantation in the endometrium.

Data from scientific studies on the relationship between omega-3 fatty acid intake and improved fertility are inconclusive. Studies show that serum concentrations of omega-3 fatty acids play an important role in reproduction in animal models, while conflicting results have been reported in human studies of infertile women. The extent to which omega-3 fatty acid concentrations affect natural fertility is unknown. This area is still under investigation.

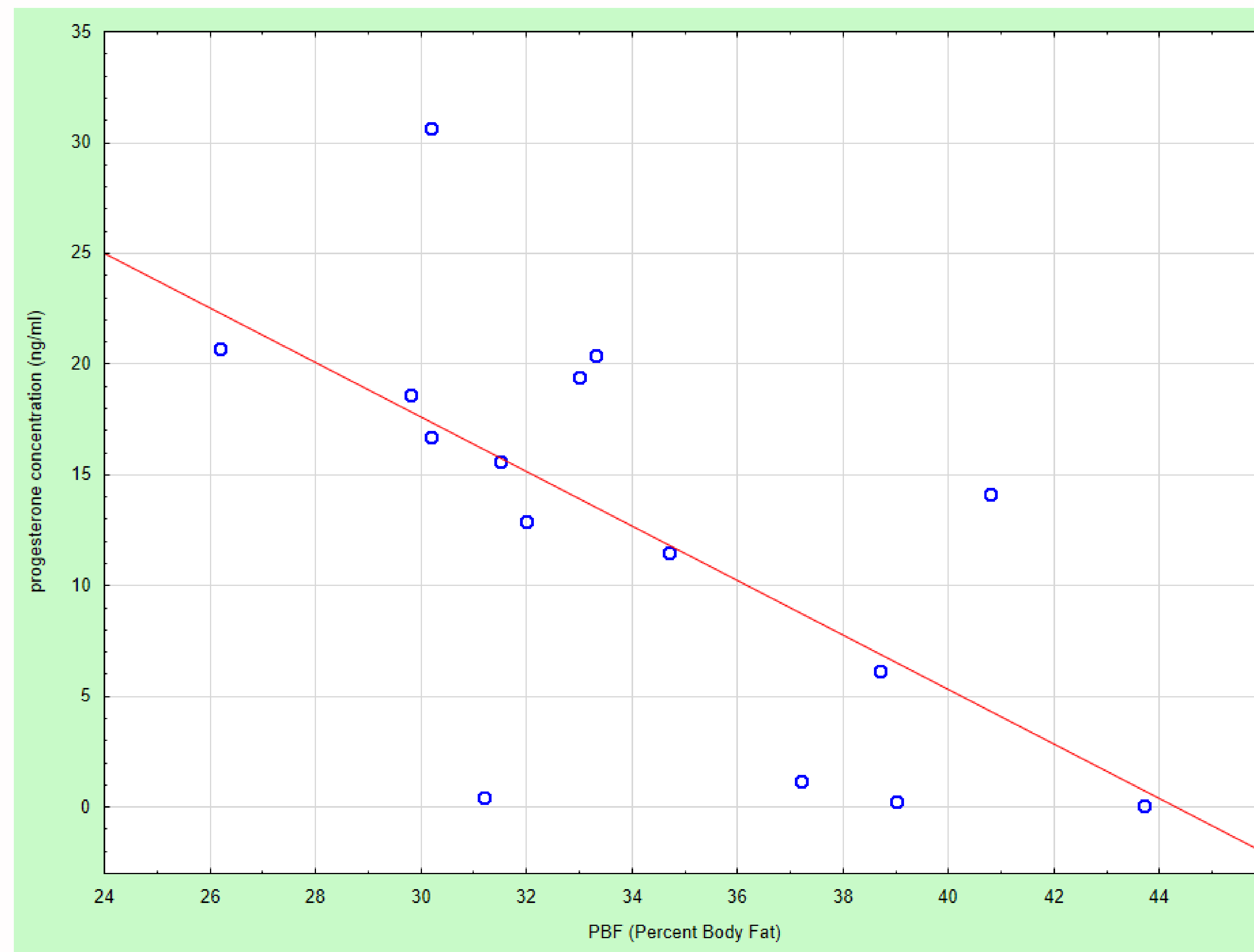
Most studies have shown an effect of BMI on fertility. However, BMI is not a good indicator of body composition. Moreover there are very few studies that compare fertility with body fat percentage. In addition, the influence of lifestyle factors such as obesity, physical activity, and diet on progesterone levels remains an unresolved issue.



Positive, strong correlation ($R=0.77$, $p<0.001$) between AMH concentration (ng/ml) and omega-3 fatty acid dietary intake (g/d)

STUDY GROUP

The preliminary study was conducted in 16 women with and without fertility impairment. In all the subjects blood samples for the hormone test were taken at the same phase of the cycle. The patients came from the Department of Gynecologic Endocrinology and Gynecology of the Developmental Age, Medical University of Białystok.



Negative, strong correlation ($R=-0.67$, $p=0.006$) between progesterone concentration (ng/ml) and body fat percentage

RESULTS

A statistically significant positive correlation between AMH levels and dietary intake of omega-3 fatty acids was found, and statistically significant negative correlation between progesterone levels as well as a body fat percentage.

CONCLUSIONS

Preliminary research suggests that higher dietary intake of omega-3 fatty acids, along with lower body fat levels (which are within norms), may be important for the improvement of fertility parameters in women.

An increase in physical activity, especially aerobic activity, may be beneficial in terms of the reduction of body fat levels. Adequate levels of omega-3 fatty acids may be influenced by adequate dietary intake or supplementation.

High AMH levels may correlate with the incidence of polycystic ovary syndrome in women. Therefore, special attention was paid in the study to the relationship between AMH levels and omega-3 fatty acid intake. The study sample was mostly characterized by low AMH levels. Only two patients had elevated AMH levels, but these are outliers on the scatter plot. These values will be taken into account as the study progresses.

Due to the small sample size further research is needed to determine which lifestyle parameters may affect fertility parameters in women.