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**Comparison of Cognitive Abilities and Personality Traits inInfertile Women with and without Pelvic Inflammatory Disease1**

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**Extended Abstract**

**Background and Objectives**

Infertility is a complex medical and psychosocial issue affecting millions of couples worldwide. It is defined as the inability to conceive after one year of unprotected intercourse and can be classified as primary or secondary. Pelvic inflammatory disease (PID)—an infection involving the uterus, fallopian tubes, ovaries, and adjacent pelvic structures—is a major cause of secondary infertility. PID often leads to serious complications such as tubal factor infertility and ectopic pregnancies, creating substantial public health and economic burdens. Sexually transmitted infections, such as chlamydia and gonorrhea, are common causes of PID, though internal infections, intrauterine contraceptive use, and unsafe abortions may also contribute.

Beyond its physical impact, infertility is associated with significant psychological stress, cognitive impairments, and personality changes. Chronic inflammatory diseases and infertility have been linked to cognitive dysfunction through mechanisms such as inflammation, hypoxia, and prolonged emotional distress. Personality traits, particularly neuroticism, and conscientiousness, may also influence coping strategies and treatment adherence among affected women. However, limited evidence exists regarding whether infertility caused by PID differs from infertility of other origins in terms of cognitive abilities and personality traits.

The present study aimed to fill this gap by comparing cognitive abilities and personality traits in infertile women with and without PID. The findings are expected to inform targeted psychological support and improve treatment outcomes in this population.

**Materials and Methods**

This causal-comparative study was conducted on infertile women referred to Al-Zahra Hospital in Rasht, Iran, in 2021. Participants were eligible if they had experienced infertility for at least one year despite regular unprotected intercourse. Using convenience sampling, 105 women were initially recruited for the study. After excluding incomplete responses, 48 women with PID and 57 women without PID were included in the final analysis. Participants’ ages ranged from 20 to 40 years, and their educational levels varied from elementary school to postgraduate degrees.

Data collection tools included a demographic checklist, the Cognitive Abilities Questionnaire (Nejati, 2013), and the short form of the NEO Personality Inventory (McCrae & Costa, 1985). The Cognitive Abilities Questionnaire evaluates seven domains: memory, inhibitory control and selective attention, decision-making, planning, sustained attention, social cognition, and cognitive flexibility. The NEO Personality Inventory assesses five core personality traits: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness.

Due to COVID-19 restrictions, data were collected virtually or via paper questionnaires. Ethical approval was obtained from the Guilan University of Medical Sciences Ethics Committee (IR.GUILAN.REC.1400.039). Statistical analyses, including the Mann-Whitney test and multivariate analysis of variance (MANOVA), were performed to evaluate group differences.

**Results**

No significant differences were found in overall cognitive abilities or personality traits between infertile women with PID and those without PID (p > 0.05). However, educational level emerged as a significant factor. Across both groups, women with higher education scored significantly better in four cognitive domains:

* **Memory** (p < 0.05)
* **Inhibitory control and selective attention** (p < 0.05)
* **Decision-making** (p < 0.05)
* **Sustained attention** (p < 0.05)

The total cognitive ability score was also higher among more educated participants (p < 0.05). Regarding personality traits, the only significant difference based on education was observed in **openness to experience** (p < 0.05), with higher-educated women demonstrating greater transparency. No differences were observed in neuroticism, extraversion, agreeableness, or conscientiousness between the two groups.

**Discussion and Conclusion**

The findings indicate that infertility associated with PID does not lead to greater cognitive dysfunction or notable differences in personality traits compared to infertility from other causes. This contrasts with research on other chronic inflammatory conditions that often report cognitive impairments and personality shifts. One explanation may be that PID-induced inflammation is localized to the reproductive organs and does not significantly impact brain function.

Education was shown to play a crucial role in enhancing cognitive abilities and openness to experience, regardless of PID status. Women with higher education levels may benefit from improved problem-solving skills, more effective coping strategies, and greater access to treatment resources, all of which can positively influence psychological well-being and treatment outcomes.

The absence of differences in personality traits between the two groups could reflect advancements in infertility treatments and broader access to psychological support, which may help reduce stress and anxiety. Furthermore, the shared experiences of infertility across both groups might explain the similarities observed in personality profiles.

This study underscores the importance of considering educational level when designing interventions for infertile women. Tailored psychological and educational programs may improve treatment adherence, emotional resilience, and overall quality of life.

Nevertheless, several limitations must be noted. Data collection was partially virtual due to the COVID-19 pandemic, which may have affected participation. Additionally, the sample was limited to a single medical center, reducing generalizability. Future research should replicate this study with larger, more diverse populations and include healthy controls. It is also recommended to examine the severity of PID-related inflammation and its potential relationship with cognitive and personality variables.

In summary, infertility—whether associated with PID or other causes—did not significantly influence cognitive abilities or personality traits in this sample. Educational attainment was found to be an important predictor of cognitive performance and openness. Interventions focusing on education and cognitive skill-building may enhance psychological adjustment and improve outcomes for infertile women.