

Exploring the Relationship between Anti-Mullerian Hormone and Quality of Life among Infertile Women in India

1* Khushboo Vijaywargiya, 2* Prof. Mani Sachdev

¹ Research scholar, Amity Institute of Behavioural and Allied Science, Amity University Jaipur, Rajasthan, India.

² Professor and Head, Amity Institute of Behavioural and Allied Science, Amity University Jaipur, Rajasthan, India.

*Corresponding Author: Khushboo Vijaywargiya *Amity Institute of Behavioural and Allied Science, Amity University Jaipur, Rajasthan, India.

Abstract

Beyond the biological limitations, infertility is a global reproductive health issue that affects the physical, emotional, psychological and social well-being of individuals. Infertility is when a couple is unable to conceive for 12 months, even after having unprotected sex. There has been growing clinical evidence of quality of life being associated with fertility, but they have not been explored completely. Antimullerian hormone has been marked as the clinical indicator of ovarian reserve, but its connections to psychosocial aspects have not been explored. So, this study aimed to explore the relationship between Antimullerian hormone and Quality of life in infertile women. This was a correlational research design in which infertile women between the ages of 21 and 50 from Jaipur city in India were considered part of this study. The hormone level, i.e. Anti Müllerian hormone, was analysed, and all women were given the Fertility Quality of Life. These scores were analysed using descriptive statistics and Pearson correlation to examine the relationship between the two. The results showed that most women had a moderate quality of life. When the relationship between QOL and AMH was tested, it was found that higher levels of AMH lead to lower quality of life, proving to have a negative correlation. The results indicate the importance of incorporating psychological support when assessing hormones during infertility. It is important to view infertility as a multifaceted issue rather than just a biological one. This study emphasises improving the quality of life of the infertile women, requiring an integrated approach that deals with the psychosocial and the physiological aspects as well.

Keywords- Infertility, Anti-Mullerian Hormone, Quality of Life.

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Introduction

Infertility is recognised as more than just a biomedical issue, as its multifaceted public health concern is now coming into awareness, as it has psychological and social ramifications too. Infertility is defined as when a couple is unable to conceive even after having 12 months of unprotected coitus. Infertility has become very common in recent years, affecting 10-15% people worldwide, making it an important issue to be looked into. When infertility strikes, it brings along multiple psychosocial issues with it, such as depression, stress, and anxiety. It then intensifies and leads to a lower quality of life and marital strain, compounded by social and family pressure. This gets even more intensified in a country like India, where reproduction is validation for female identity. There are two types of infertility, one being primary infertility, which means being unable to conceive even once in a lifetime. In contrast, secondary infertility means having at least one child and then being unable to conceive after that. There are many causes of infertility, some of them being lifestyle changes, rapid urbanisation, smoking, drinking, dysfunction of reproductive organs and disruption in the secretion of the hormones.

One hormone that can impact infertility is the Anti-Mullerian hormone, which is a marker of ovarian reserve. AMH is a glycoprotein that is also known as the Müllerian inhibitory factor. It is secreted by granulosa cells of prenatal and tiny antral follicles. This hormone is useful as it helps in functioning and reproductive assisted technology, which is consistent throughout the menstrual cycle. It helps to quantify the eggs that are present in the ovarian reserve, which helps in conceiving. But, less attention has been paid to the psychosocial health components of AMH, compared to its clinical significance. Hormone levels that are part of an infertility evaluation are interpreted not only as medical data but also as indications of how likely it is that they will be able to conceive, which can affect anxiety, hopelessness, self-esteem and quality of life. Therefore, even if AMH is a physiological indicator, its significance for the individual patient could be emotional and/or social. The significance of understanding this connection lies in the fact that fertility treatment should not only be based on laboratory parameters and treatment protocols, but also on the lived experience of women who are facing infertility. Quality of life is an important consideration in fertility research and can vary from

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one woman to another depending on her expectations, support network and perception of reproductive loss if she has high or low AMH. The current study, therefore, attempts to look into the relationship between the Anti-Müllerian hormone and quality of life among infertile women in Jaipur city, Rajasthan, India, through a correlational design. The study will investigate whether biological measures of fertility are related to Fertility Quality of Life scores, to explore the links between biological measures of fertility and women's perceptions and experiences of infertility in everyday life. This investigation is important as it represents a more holistic approach to understanding infertility: a complex issue that transcends physiology. The study results could assist in identifying the importance of psychological assistance, counselling, and comprehensive fertility care encompassing reproductive as well as emotional aspects. The study further adds to the increasingly convincing evidence supporting the need for an integrated approach to infertility care that involves psychosocial as well as medical issues and interventions to optimise the outcomes for women and families.

Rationale of the study

Infertility is a complex problem that impacts both physiological and psychological functioning of an individual. It is important to understand both aspects as they are interconnected. It has been established that the Anti Müllerian hormone indicates the ovarian reserve, and its clinical and reproductive implications have been established, but very little attention is given to its psychosocial ramifications. Many results of the studies have proven that infertility causes stress, depression, and anxiety and can affect an individual's quality of life. Yet, there are very few studies that indicate the direct relationship between the anti-Mullerian hormone and quality of life. Therefore, this study focuses on bridging the gap between the two, which is the relationship between biological and psychological aspects of infertility, to provide a holistic view of infertility for better treatment of these patients.

Methodology

Aim

This study aimed to understand the relationship between the anti-Mullerian hormone and quality of life among married infertile women in India.

Hypothesis

There will be a significant relationship between the Anti-Mullerian hormone and Quality of life.

Variables

- Anti-Mullerian Hormone
- Quality of Life

Method and Research Design

The present study uses the quantitative method. It employs a correlational and cross-sectional design to examine the relationship between Anti Müllerian Hormone and quality of life related to fertility. This study evaluates the importance of exploring the psychosocial aspects of infertility impacted by hormonal fluctuations.

Sample

The sample for this study was taken from the city of Jaipur, India. There were 400 participants in this study who were infertile women analysed by the local gynaecologists. For selecting these women, the method of purposive sampling was used. Women between the ages of 21 and 50 were chosen to be part of this study.

Procedure

This study was conducted on infertile women in Jaipur, India. These infertile women were examined by gynaecologists, who were between the ages of 21 and 50. These women's hormone, i.e. Anti Müllerian hormone, was examined, and after receiving informed consent, these women were given an appropriate questionnaire related to quality of life, i.e. Fertility Quality of Life (FertiQoL). The questionnaires were analysed through appropriate statistics, and the results were analysed.

Statistical Analysis

The analysis in this study uses the Statistical Package for the Social Sciences (SPSS). The objectives were analysed using inferential statistics (i.e., the Pearson correlation coefficient) to examine the relationship between quality of life and anti-Mullerian hormone, and descriptive statistics were used to understand the distribution of quality-of-life levels.

Table 1: Antimullerian hormone profile of infertile married women

Range	Frequency	Percentage
Below	5	3.60%
Within	128	94.0%
Above	3	2.20%
Total	136	34%

Table 2: Level of Fertility Quality of Life of Infertile Married Women

Category	Frequency	Percentage
Low	47	11.75%

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<i>Medium</i>	336	84%
<i>High</i>	17	4.25%

Note. n = 400

Table 3: Relationship between Anti- Mullerian Hormone and Quality of Life.

	AMH	Quality of Life
AMH (N=136)	1	-.282**
Sig.2tailed		<.001

Exploring the Relation

Discussion

Quality of Life among

As mentioned above, the Anti-Mullerian hormone has a significant impact on fertility. So, it was evident that my gynaecologist prescribed the AMH test when an individual is checked for their infertility; it is an important biomarker even during any type of assisted reproductive techniques. Table 1 shows that amongst 400 infertile women, 136 women, i.e. 34% women, had AMH levels assessed along with other hormone levels. It was observed that out of 136, 3 women had high levels of AMH, which is the 3.3% of the total population. 128 women had adequate levels, making them the majority with 94.1% of the total population. Amongst 136 women, 3.6%, i.e. 5 women, had AMH levels below the adequate levels. These results could be because infertility can be caused by dysfunction of reproductive organs or any other changes in the functioning of any other hormones, as well as having many unexplained causes. The anti-Mullerian hormones just provide the quantity of eggs and do not check the quality of the oocytes, which means that a normal level does not guarantee successful conception. Table 2 shows the results of the quality of life in infertile married women. All 400 women were tested, of whom 47 women had scored low, which is 11.75%. The majority of the population, i.e. 84% (336 women), had medium levels of quality of life. 17 women scored high on quality of life, i.e. 4.25% amongst the total population. Bakhtiyar et al. (2019) found that infertility can reduce quality of life but does not severely impair it. The reasons for this result could be that the social support has been increased in recent times, and people feel that there is hope because of the advancements in science, leading to assisted reproductive techniques. There might be differences in the marital support and financial status, which is why most of the women had an average quality of life.

Table 3 shows the relationship between the quality of life and anti-Mullerian hormone in infertile women. It was found that there is a significantly negative relationship between them, which means that excess production of AMH can lead to a low quality of life. Even though this correlation is not so strong, it is meaningful. Recent reviews of research have also displayed that infertility is generally found when there is a low quality of life and is accompanied by depression, stress, and anxiety.

As an instance, it was found by Wójtowicz et al. (2025) that infertile women in general have a lower quality of life irrespective of their hormonal status. Wu et al. (2020) also found that women who go through IVF treatments have lower levels of quality of life because of the anxiety of the treatment, uncertainty of the process and repeated medical intervention. It was observed that AMH, when examined in an infertile setting, leads to inconsistent but significant results. Previous researches had proved to have varied results of AMH in infertile settings but significant correlations. Lawal et al. (2020) found that there is a significant relationship between AMH and psychological distress, which indicates that the psychological state can be reflected by hormonal indicators. Contrary to this, another research shows that stress can lower the levels of AMH, suggesting a bidirectional relationship (Dong et al., 2017), which means Quality of life may not be directly related but has a

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