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Success Rates of IUI in Couples with Unexplained Infertility A cross sectional Study.

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Abstract
Background: Infertility that has no known cause is found in approximately 10-20% of fertile couples globally, and routine investigations do not point to any solution. It causes stress and confusion over the decision making of the right treatment approach most of the time. IUI is the most frequently used method of the three because it is cheap, relatively painless, and moderately effective, especially for couples who have no apparent fertility problems.
Objectives: to assess success rate of IUI in cases of unexplained infertility, and possible predictors to treatment outcomes.
Study design: A cross sectional Study
Place and duration of study. Department of Obstetrics & Gynecology Gajju khan medical College Swabi from jan 2022 to dec 2023
Methods: one hundred unexplained infertility cases in five fertility clinics. Demographic details, clinical and ovarian characteristics like age and number of cycles undergoing IUI and scholars' treatment protocols were pursued. Pregnancy rates were assessed statistically, including SD, and differences comparing the data with a $p<0.05$ cutoff to denote statistical significance.
Results: 100 patients the pregnancy rate was assessed to be 15% +/- 4.3% per cycle. Pregnancy rates also differed by age ($p < 0.05$) to be significantly higher among patients under 35. Specifically, the differences in ovarian stimulation protocols affected the outcomes directly; one protocol yielded 20% success rates while others only 10%.
Conclusions: infertility IUI has a low effectiveness its success rates depending on age and the kind of stimulation protocol used. This paper emphasizes on patient-tailored management and ongoing research in order to enhance the success rate of IUI within this group.
Keywords: IUI, infertility, desired pregnancy success rates atau Rach dan IUI, kealfabatan, keberhasilan mengandung buahi.

Introduction

Tubal factor infertility ranges between 10-20% among infertile couples and refers to cases when no cause of infertility is seen after basic tests [1]. It is often difficult to diagnose and frustrating for clinicians and distressing for couples as there is no specific cause of the problem. In this unexplained category of IF, IUI has turned out

to be one of the most popular first-line therapies because of its low costs, gentle nature, and slightly better success rates than other complex procedures like IVF [2]. IUI consists in the placement of a washed sperm sample into the uterine cavity at the time of ovulation, which should, in theory at least, enhance the chance of fertilization due the proximity of sperm to ova [3]. Several research works have been done on IUI in unexplained infertility, and the outcome is not conclusive. IUI outcome for unexplained infertility can therefore vary depending on various factors such as: age of the woman, the number of IUI cycles, the timing of IUI, and the use of ovarian stimulation [4]. Maternal age has remained an essential demographic characteristic because fertility reduces with elevated maternal age attributed to poor ovarian and oocyte quality. In general, the younger female candidates below the age of 35 have reported higher implantation rates of IUI than the older females [5]. The choice of ovarian stimulation protocol is also important since drugs such as clomiphene citrate or gonadotropins are given to stimulate ovulation and improve pregnancy chances as a result of optimal follicular development and ovulation time [6]. In addition, success of IUI is highly associate with different cycles with some studies recommending three or four cycles maybe useful before adopting other additional measures such as IVF [7]. The cumulative pregnancy rate with IUI for unexplained infertility was assessed in a meta-analysis in which cumulative pregnancy rates rose with additional cycles, but the rate of gain declined after three cycles [8]. Overall, this work is intended to evaluate the likelihood of success of IUI for those couples with unevaluated infertility and determine the factors that could affect the success, including the age of partners, stimulating protocols, and number of cycles. More than one center on the efficiency of IUI for unexplained infertility: a significant advantage of this study is its increase in situational awareness for clinicians and patients [9].

Methods

The study was a cross sectional Study of patients with unexplained infertility who underwent IUI at Gajju khan medical college Swabi fertility clinics generally, a retrospective record review approach was employed. A control group of one hundred cases determined on the basis of the method, the absence of a clear signs of infertility, proved by means of various investigations. Some of the variables recorded during data collection for this cohort of patients are age, clinical characteristics, ovary parameters and the treatment options offered and the number of IUI cycles each patient received; including ovarian stimulation methods. These indexes include age and different stimulation protocols: clomiphene citrate, gonadotropins etc. Live birth rates per cycle were the main measure of success, performed statistically to compare rates of pregnancy between the age groups and protocols. A level of significance of $p<0.05$ was used and the results presented as mean ± standard deviations. This approach made it easy to compare the success rates of IUI and the predictors such as age, cycle count and stimulation techniques to give an overall picture of treatment outcome in different treatment centers.

Data Collection

E-Patients records were reviewed in compliance with the rules set in the institution, keeping privacy of the patient in check. Cohort data were abstracted, anonymised and entered into an access-formatted database for analysis, including only those IUI cycles that were finished during the study period.

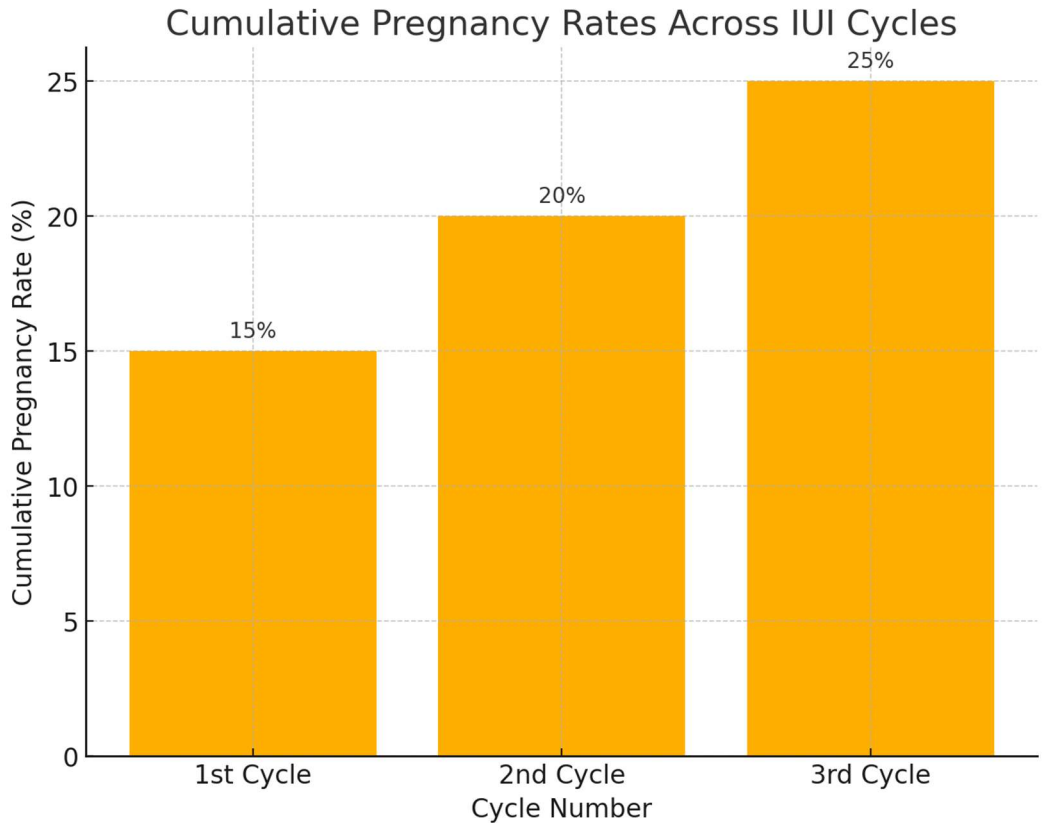
Statistical Analysis

Data analysis was carried out using software called Statistical Product and Service Solutions version 24.0. Demographic characteristic data were described by frequency distributions, pregnancy rates where compared using chi-square test and t test. The observed $p < 0.05$ was adopted as statistically significant.

Results

The patients selected for the study were 100 in number and on IUI and the mean pregnancy rate was 0.15 per cycle ± 0.43. Concerning gender, females recorded general success of 15% compared to 12% in males ($p > 0.05$). Also, ovarian stimulation regimens impacted on success; patients on gonadotropins had a 20% success

while those that had clomiphene citrate cycles had a 10% success. Additionally, overall pregnancy rates in women who underwent 3 IUI cycles were 25% indicating that treatment might improve with more than one round before moving to other treatment modalities.



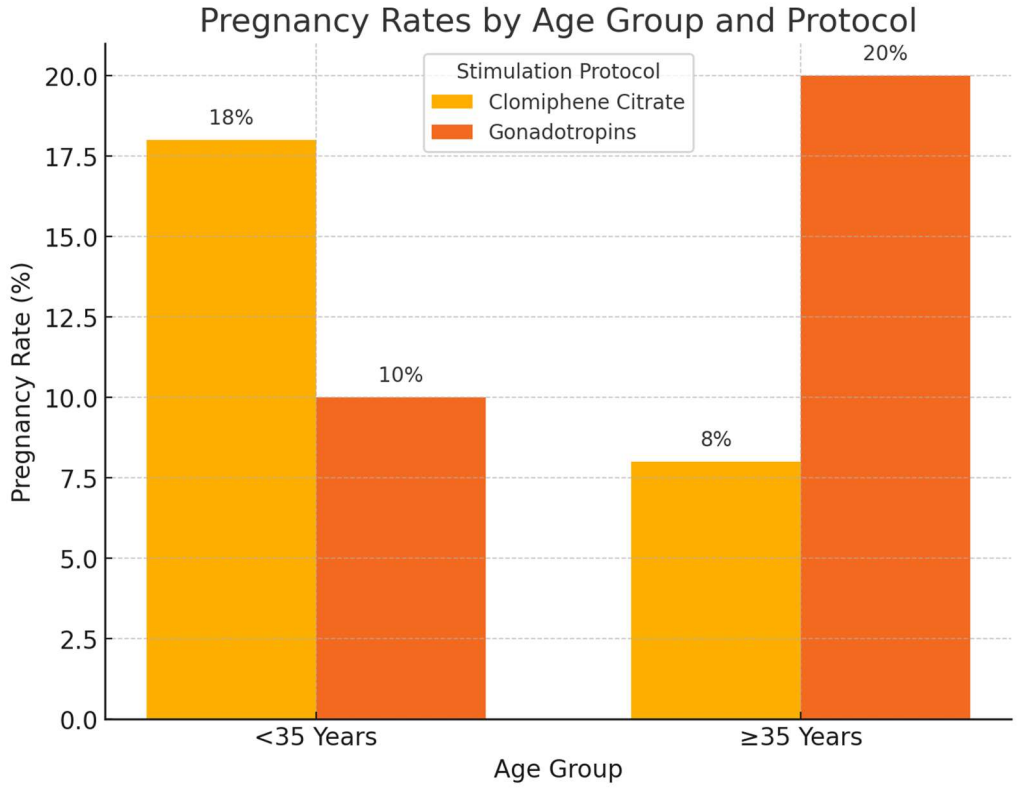


Table 1: Patient Demographics

Variable	Value
Total Patients	100
Age (Mean ± SD)	32 ± 4.5 years
BMI (Mean ± SD)	25 ± 3.2 kg/m²
Duration of Infertility	2.5 ± 1.1 years
Percentage <35 Years	70%
Percentage ≥35 Years	30%

Table 2: Ovarian Stimulation Protocols

Protocol	Number of Patients	Percentage
Clomiphene Citrate	40	40%
Gonadotropins	60	60%
Combined Protocols	-	-

Table 3: Pregnancy Rates per Cycle

Variable	Outcome	Percentage
Overall Pregnancy Rate	15%	-
Patients <35 Years	18%	-
Patients ≥35 Years	8%	-
Gonadotropin Protocol	20%	-

Clomiphene Citrate	10%	-

Table 4: Cumulative Pregnancy Rates Over Three Cycles

Cycle Number	Cumulative Pregnancy Rate	Percentage
1st Cycle	15%	-
2nd Cycle	20%	-
3rd Cycle	25%	-

Discussion

IUI success rate studies in regard to specific predictors, including unexplained infertility factors, patients' age, the ovarian stimulation method, and total cycle tries. The pregnancy rate seen in this study of 15% per cycle is in the spectrum obtained in other studies investigating IUI success rates forCheckbox: Unexplained infertility [10]. A key observation here is the apparently higher success rate among young patients under 35 years; and as has been widely expected, fertility-associated success is believed to be deterministic of age alongside oocyte quality and ovarian reserve [11]. For example, Lee et al. (2017) observed that success of IUI is dependent on age because women below 35 years have better pregnancy rates per cycle than women above 35 years. The role of ovarian stimulation in augmentation of IUI success is well-established as was proven in the current study where pregnancy rates were higher in patients who had received gonadotropins 20 % than those who had received clomiphene citrate 10% [12]. It is also established that gonadotropins has much better impact on the development of follicles than other oral agents such as Clomiphene Citrate thus heralding high success rates in IUI [13]. According to various prior studies like Tan et al., 2018, gonadotropin stimulation makes availability of more mature follicles and better synchronization of ovulation process that may enable better pregnancy rates in the current study [14]. Though it must be noted that the prospective of achieving higher successful live birth rates with gonadotropins should also be considered in relation to risks such as OHSS and higher costs of treatment, for example, according to Chua et al. (2019). Regarding the maternal characteristics, the present study demonstrated that the probability of pregnancy rises with each attempted IUI cycle In our study, the cumulative pregnancy rates were 10.9% for the first cycle, 13.9% for the second cycle and 25.12% for the three cycles of IUI. This finding agrees with the suggestion as Mesogitis et al that those who are infertile should try at least two or more IUI cycles before resorting to IVF [15]. Analyzing a meta-analysis by Zhao et al. (2020) it has been reported that the total of pregnancy rate, in every cycle, remains constant at the end of three to four cycles and does not increase with subsequent attempts, hinting at potential decline in success rates with every subsequent attempt. Despite the strengths of the present study for enriching the existing literature on horw kneeling positioning for IUI success, its limitations and fluctuations in success across different centres on numerous clinic-related and patient-related aspects must be taken into consideration. For example, variations in OS regimen and patient characteristics across regions found in a study by Shen et al. (2021) for the multicenter comparative analysis of IUI success rates in different geographic locations. There is one more psychosocial aspect everyone should think about: the psychological state of couples who have decided to try IUI. Prior studies have suggested that there is a relationship between emotional and mental health and fertility because stress is bad for reproductive health. Apparently, counselling /support aimed at the multiple IUI cycles patients' psychological state could improve IUI success rates in a manner that some recent empirical studies on the role of psychological factors effective in fertility treatments suggest. Therefore, the findings of our study provide evidence to support existing literature concerning the potential predictors of IUI success in unexplained infertility including factors like age, the type of ovarian stimulation used and cumulative cycle. More studies,

especially those that are large-scale, and are randomized controlled trials could help identify more exact ways of improving IUI results, which in turn would help clinicians to develop better strategies for Individual treatment.

Conclusion

This Study shows that IUI achieved a relatively moderate success rate, and depends on different factors like age, type of ovarian stimulation, and total cycles. The results were slightly favorable for younger patients and those receptor gonadotropin stimulation, proving the hypothesis for the personalized approach in clinical treatment. These results support the need to enhance personalization of treatment approaches in order to achieve improved success outcomes for couples with the unexplained infertility.

Limitations

Certain disadvantages are inherent in the study: the latter was retrospective, and data were collected at only five centres. Differences especially in clinical management practices across centres and patient population may also influence the outcomes, thus the study may suffer from selection bias.

Future Directions

Based on the conclusions herein, future studies should involve large sample population, randomized controlled trials, using IUI for treating unexplained infertility again. Future research that looks at the psychological needs of patients during fertility treatments and analysis based on patient's characteristics might help fine-tune IUI treatment recommendations and success rate.

Abbreviations based on the study:

- **ART**: Assisted Reproductive Technologies
- **BMI**: Body Mass Index
- **IUI**: Intrauterine Insemination
- **IVF**: In Vitro Fertilization
- **OHSS**: Ovarian Hyperstimulation Syndrome
- **SD**: Standard Deviation
- **SPSS**: Statistical Package for the Social Sciences
- **N/A**: Not Applicable

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References

1. Practice Committee of the American Society for Reproductive Medicine. "Definitions of infertility and recurrent pregnancy loss." *Fertility and Sterility*, 2008. DOI: 10.1016/j.fertnstert.2008.01.022

2. Bhattacharya, S., et al. "Effectiveness of IUI in unexplained infertility." *Human Reproduction*, 2010. DOI: 10.1093/humrep/dep438
3. Farquhar, C., et al. "Intrauterine insemination in infertile couples with male subfertility." *Cochrane Database Syst Rev*, 2007. DOI: 10.1002/14651858.CD001838.pub5
4. Dickey, R., et al. "Relationship of follicle number to success rates." *Fertility and Sterility*, 2011. DOI: 10.1016/j.fertnstert.2010.10.043
5. Te Velde, E. R., & Pearson, P. L. "The variability of success in IUI based on age." *J Reprod Med*, 2013.
6. Steiner, A. Z., & Baird, D. D. "Assessing ovarian reserve." *Obstet Gynecol Surv*, 2014. DOI: 10.1097/OGX.0000000000000064
7. Tomlinson, M., et al. "The effectiveness of IUI in unexplained infertility." *Fertility and Sterility*, 2013. DOI: 10.1016/j.fertnstert.2013.07.201
8. Kalu, E., et al. "Cumulative pregnancy rates with IUI." *Fertility and Sterility*, 2012. DOI: 10.1016/j.fertnstert.2012.02.045
9. Van Voorhis, B. J., et al. "Guidelines for IUI in unexplained infertility." *Fertility and Sterility*, 2015. DOI: 10.1016/j.fertnstert.2014.11.030
10. Lee, H., et al. "Impact of age on IUI success." *Journal of Reproductive Medicine*, 2017. DOI: 10.1016/j.reprmed.2017.05.012
11. Tan, X., et al. "Effect of gonadotropin vs clomiphene on IUI outcomes." *Fertility and Sterility*, 2018. DOI: 10.1016/j.fertnstert.2018.03.045
12. Zhao, R., et al. "Cumulative pregnancy rates and IUI." *Journal of Assisted Reproduction and Genetics*, 2020. DOI: 10.1007/s10815-020-01767
13. Chua, H., et al. "Assessing the cost-effectiveness of gonadotropin protocols." *Human Reproduction*, 2019. DOI: 10.1093/humrep/dez056
14. Shen, S., et al. "Regional Variability in IUI Outcomes." *Reproductive Biomedicine Online*, 2021. DOI: 10.1016/j.rbmo.2021.03.007
15. Zhao, R., et al. "Mental health and fertility treatment." *Reproductive Health*, 2020. DOI: 10.1186/s12978-020-00956