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Original Research Article.

Evaluation of Uterine Parameters in Reproductive Age Group Women by Ultrasonography at a Tertiary Care Hospital

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ABSTRACT

Introduction: Assessing the length of the uterus is crucial for diagnosing and treating different uterine factors that contribute to infertility. Hence, the current investigation was undertaken to quantify various parameters of uterus.

Materials & Methods: The study comprised females who were not pregnant, had a normal and regular menstrual history, and did not have any gynecological issues. Exclusion criteria was females who are expecting a baby, women taking oral or injectable medications to stimulate ovulation, women taking oral contraceptive tablets, women undergoing hormonal replacement therapy, women with intrauterine contraceptive devices (IUCD), women diagnosed with ovarian or uterine cancer or any pelvic tumor and females who had undergone any gynecological/obstetrical surgery.

Results: Mean transverse Diameter (cm) of 4.36±0.42, longitudinal length (cm) of 7.39±0.68, uterine volume (cm^3) of 71.22±8.53 and anteroposterior diameter (cm) of4.21±053.

Conclusion: Our study will add to the existing normative data on uterine characteristics, specifically focusing on a wide age range India. The uterine parameter nomogram generated by our work will be highly valuable for gynecologists and infertility experts.

Keywords: Menstrual, Infertility, Contraceptive.

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INTRODUCTION

Assessing the length of the uterus is crucial for diagnosing and treating different uterine factors that contribute to infertility.[1]

The measuring of uterine length is crucial prior to an in-vitro fertilization operation. [2] It was observed that women with longer longitudinal uterine lengths have better outcomes when using assisted reproductive techniques. The most favorable outcomes are seen when the length of the uterus falls within the range of 70 to 79 mm. [3]

The dimensions of the uterus, namely its volume, are used to identify the most suitable approach for performing a hysterectomy, whether it be by an abdominal, vaginal, or laparoscopic procedure.[4]

Ultrasonography is a highly convenient technique for accurately measuring the size and shape of internal organs.[5] Hence, the current investigation was undertaken to quantify various parameters of uterus.

MATERIALS AND METHODS

This study was conducted among 50 non-pregnant females within the reproductive age group. The study comprised females who were not pregnant, had a normal and regular menstrual history, and did not have any gynecological issues. Exclusion criteria was females who are expecting a baby, women taking oral or injectable medications to stimulate ovulation, women taking oral contraceptive tablets, women undergoing hormonal replacement therapy, women with intrauterine contraceptive devices (IUCD), women diagnosed with ovarian or uterine cancer or any pelvic tumor and females who had undergone any gynecological/ obstetrical surgery.

The ultrasonography (USG) was conducted on female patients lying on their back with a fully distended urine bladder. The uterine position was determined by inserting the probe on the suprapubic region.

The length and anteroposterior diameter of the uterus were determined by positioning the probe in a longitudinal orientation along the sagittal plane. The measurement of length was taken from the fundus to the external os. The anteroposterior diameter refers to the largest measurement of the body of the uterus in the midsagittal plane. The transducer was rotated to an angle of 90° in order to measure the transverse diameter. The transverse diameter refers to the largest measurement taken in the transverse plane across the fundus.

The volume of the uterus was determined by measuring its longitudinal length, transverse diameter, and anteroposterior dimensions, and applying the following formula:

Uterine volume = 0.523 × longitudinal length (LL) × transverse diameter (TD) × anteroposterior diameter (APD).

The statistical analysis was conducted using SPSS (Statistical Package for Social Sciences) version 15.0, developed by IBM in Chicago, Illinois, USA. The data was organized into a table and the average and standard deviation were computed.

Table 1: Uterine parameters

Uterine parameters	Mean± Standard deviation
Transverse Diameter (cm)	4.36±0.42
Longitudinal length (cm)	7.39±0.68
Uterine volume (cm3)	71.22±8.53
Anteroposterior Diameter (cm)	4.21±053

RESULTS

The study included transabdominal ultrasonographic measurements of 50 females of age range 19-41 years (mean age 33.06 ± 0.32 years).

Table 1 reports the uterine parameters with mean transverse Diameter (cm) of 4.36 ± 0.42, longitudinal length (cm) of 7.39±0.68, uterine volume (cm^3) of 71.22±8.53 and anteroposterior diameter (cm) of4.21±053.

DISCUSSION

The assessment of uterine size is a crucial component in the evaluation of the uterus for infertility. Our study found mean transverse Diameter (cm) of 4.36±0.42, longitudinal length (cm) of 7.39±0.68, uterine volume (cm^3) of 71.22±8.53 and anteroposterior diameter (cm) of4.21±053.

Similar study among Iranian population by Esmaelzadeh et al[6] found that the longitudinal length of the uterus in nulliparous females was 7.28 ± 0.13 cm. Sirisena et al[7] discovered that the average longitudinal length of the uterus in females of reproductive age is 7.50 cm. Another study by Das et al[8] reported that vaginal hysterectomy can be performed easily in females with a uterine capacity of up to 200 cm^3.

Similar study by Egbase et al[9]found that the females with a uterine length of 7-9 cm had the highest implantation and pregnancy rate compared to the other groups with a uterine length less than 7 cm or greater than 9 cm. Our study found that the average uterine length of females in their reproductive age 7.39±0.68, which suggests that this is the ideal length for successful implantation.

The observed variations in uterine parameters in our study compared to those reported in other countries may be attributed to factors such as parity of females, stages of the menstrual cycle, racial, nutritional, genetic, and environmental factors.

Understanding the typical size of the uterus is crucial for assessing the reproductive health of women. This is because an increase in the size of the uterus is linked to the occurrence of different uterine conditions such uterine fibroids and adenomyosis. Establishing normative curves for uterine dimensions at different stages of life is crucial for determining normality and identifying aberrant uterine shape and size. Females with limited uterine size have a higher chance of miscarriage and unsuccessful implantation.[1]

CONCLUSION

Our study will add to the existing normative data on uterine characteristics, specifically focusing on a wide age range India. The uterine parameter nomogram generated by our work will be highly valuable for gynecologists and infertility experts.

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