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Measurement of Uterus Sizes of Multiparous Women using Ultrasound

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ABSTRACT

Human uterus is a pear-shaped fibromuscular organ. The measurements of a typical uterus are 7.6x4. 5x3cm. The uterus grows slowly during fetal life until the end of the first trimester when it grows at a higher rate due to increased maternal oestrogen production. As a result of this continuation of the maternal oestrogen the uterus shrinks immediately after delivery.

Objective: To evaluate uterus size in multiparous women using ultrasound. **Methods:** It was a cross-sectional study carried out at private sector hospital of Gujrat over 4 months period from December 2021 to March 2022. The sample size was 41 calculated via a convenient sampling approach from previously published studies. Multiparous women following ultrasound examination during the study period were included after receiving informed consent. The patients' demographic statistics were collected on a specially designed data collecting sheet. The data was analyzed using the SSPS V20 program. **Results:** The average length was 7.9±1.15, width was 4.3±0.77, and thickness 3.5±0.66. There was no significant correlation between uterine size (length, width, thickness) and many parities because the value in the "Sig. (2-tailed)" is 0.607, 0.640, and 0.983 respectively which is more than 0.05. **Conclusions:** The current study found no correlation between the number of parities and the length, width, and thickness diameters of the uterus.

INTRODUCTION

The human uterus is a pear-shaped fibromuscular organ that can be split into the upper muscular uterine corpus and lower fibrous cervix [1]. It is positioned in the female pelvis between the urinary bladder anteriorly and the rectum posteriorly [2]. It is divided into three basic parts: fundus, body and cervix which reaches into the vaginal area [3]. The internal os is crossed by the uterine canal which emerges as the external os at the vaginal vault [4]. The uterine and ovarian arteries, which branch out from the internal iliac artery's anterior branch, supply blood to the uterus [5]. The main blood vessels supplying blood to the uterus are the uterine arteries [6]. In a multiparous woman, the cervical os is circular but becomes a transverse slit [3]. The cervix is generally solid, but during pregnancy it feels soft [7].

Uterus is divided into two parts, the cervix, and the corpus [8]. The measurements of a typical uterus are 7.6 x 4.5 x 3cm [9]. The size of the uterus is determined by parity rather than age because ovarian hormone levels drop after menopause, and uterine sizes shrink [10]. The mesometrium (the largest piece), the mesosalpinx (mesentery of the uterine fallopian tubes), and the mesovarium make up the broad ligament (connects the ovaries to the broad ligament). The following structures are found in the broad ligament: Fallopian tubes are the tubes that connect the uterus to the fallopian Ovaries [11] For both the mother and the fetus, uterine rupture is a life-threatening peripartum condition. A previous cesarean delivery is the greatest risk factor for uterine rupture,

which increases the risk to 0.5 percent [12]. Medical reasons force about a quarter of women who have had a previous cesarean delivery to deliver early. Labor induction during TOLAC (trial of labor after cesarean delivery) raises the risk of uterine rupture even more. The danger is considered to be between 1.4 and 2.3 percent [13]. The uterus grows slowly during fetal life until the end of the first trimester when it grows at a higher rate due to increased maternal estrogen production. As a result of this continuation of the maternal oestrogen the uterus shrinks immediately after delivery. Uterine length is less than 35 mm between the ages of 2 and 8 with an anteroposterior diameter of 10 mm [14,10]. Subjects are scanned in a supine position in both longitudinal and transverse plans in US examination [15]. The uterine assessment, such as pelvic ultrasound, should be part of the first evaluation of women who have lost several pregnancies [16]. The post-cesarean uterus is frequently anteflexed, and myometrial loss of about 50% is common [17]. The uterine flexion angle can be changed to a more retroflexed position after a caesarean delivery [18]. Gigantic polyps are most common in multiparous women in their 50s. At the time of presentation, these giants cervical polyps are usually misdiagnosed as malignant neoplasm. In multiparous women with something is coming out per vagina, a huge polyp of the cervix anterior lip occurs [19]. Curettage between the 2nd and 4th weeks after delivery is most likely than any other endometrial trauma to produce adhesions. Infertility, recurrent abortion, or menstrual irregularity following any uterine trauma should alert the doctor to the possibilities of intrauterine adhesions. Uterine myomas are the most frequent benign solid pelvic tumors in women, affecting 20-25% of reproductive-age women. Dysmenorrhea, repeated pregnancy loss, and premature birth are all symptoms of submucosal myomas [20]. The mullerian ducts didelphys is a rare congenital abnormality of the uterus [21]. Uterine fibroids are one of the most common uterine disorders affecting roughly 12% to 25% of women of reproductive age. Menorrhagia, frequent urination, and dysmenorrhea are all indications of benign neoplasm [22]. Over 10% of all pregnancies are complicated by preeclampsia (PE) and fetal growth restrictions (FGR) which contributes considerably to fetal and maternal morbidity and mortality [23]. A tangle of aberrant arteriovenous connections in or around the uterus is known as a uterine vascular malformation(UVM) [24]. On the 10th day, the endometrial cavity was substantially bigger in multiparous women, and the uterine cavity was mostly echo-negative [25]. The current study was intended to measure uterus dimension in multiparous women using ultrasound and to correlate the measurement of uterus with number of parities. This

current study ensures that there is no significant relationship between a patient's age and uterus measurement.

METHODS

A cross-sectional study was conducted in the department of Radiology of a private sector hospital in Gujrat, Pakistan. Subjects for this study were only female from 20 to 50 years who have undergone ultrasound examination, this study was conducted over 4 months from December 2021 to March 2022. A total of 41 patients were selected using a convenient sampling approach. An informed written consent form was also signed by patients. The ultrasound was done using a 3.5 MHz probe. The patients demographic statistics were collected on a specially designed data collecting sheet. The data were analyzed using the SSPS V20.0.

RESULTS

Number of parity	Frequency (%)
1	6(14.6%)
2	15(36.6%)
3	11(26.8%)
4	7(17.1%)
5	2(4.9%)
Total	41(100.0%)

Table 1: Frequency distribution of the Parity

The current study was conducted among 41 females for the study measurement of uterus sizes in multiparous. The study was conducted among different age groups ranging from 20-50 years. Table 1 shows the number of parities among female patients with most females reported to the radiology department were having highest frequency 15 (36.6%) and least female reported low frequency 2(4.9%).

Descriptive Statistics	N	Minimum	Maximum	Mean±SD
Uterus Length	41	6.20	10.30	7.9±1.15
Uterus Width	41	3.20	6.40	4.3±0.77
Uterus Thickness	41	2.20	5.90	3.54±0.67

Table 2: Descriptive statistics of uterus measurements

Table 2 shows the uterus length, width, and thickness with an average length measuring 7.9±1.15, width 4.3±0.77, and thickness 3.5±0.67.

Correlation between parity and uterus length	Parity	Uterus Length
Number of Parity	Pearson Correlation	.083
	Sig. (2-tailed)	.607
	N	41
Uterus Length	Pearson Correlation	.083
	Sig. (2-tailed)	.607
	N	41

Table 3: Correlation between number of parity and uterus length

Table 3 shows the correlation between many parities and uterus length there is no significant relationship between them because the value in the "Sig. (2-tailed)" is 0.607 which is more than 0.05.

Correlation between parity and uterus width		Parity	Uterus Width
Number of Parity	Pearson Correlation	1	-.075
	Sig. (2-tailed)		.640
	N	41	41
Uterus Width	Pearson Correlation	-.075	1
	Sig. (2-tailed)	.640	
	N	41	41

Table 4: Correlation between number of parity and uterus width
Table 4 shows the correlation between number of parity and uterus width there is no significant relationship between them because the value in the "Sig. (2-tailed)" is 0.640 which is more than 0.05.

Correlation between parity and uterus thickness		Parity	Uterus Thickness
Number of Parity	Pearson Correlation	1	-.003
	Sig. (2-tailed)		.983
	N	41	41
Uterus Thickness	Pearson Correlation	-.003	1
	Sig. (2-tailed)	.983	
	N	41	41

Table 5: Correlation between number of parity and uterus thickness
Table 5 shows the correlation between number of parity and thickness there is no significant relationship between them because the value in the "Sig. (2-tailed)" is 0.983 which is more than 0.05.

DISCUSSION

Human uterus is a pear-shaped fibromuscular organ that can be split into upper muscular uterine corpus and lower. Its dimension changes relative to the number of parity and there is no association of uterus measurement with patient age. A total of 41 patients were selected using a convenient sampling approach. The current study included females from age ranged from 20 to 50 years to estimate uterine size in multiparous women using ultrasound. The current study concluded that the size of uterus in multiparous women is unaffected by number of parities. According to the current study the average uterus length was 7.9 ± 1.15 , width 4.30 ± 0.77 , and thickness 3.5 ± 0.66 . The current study found no significant association between uterine size (length, width, thickness) and many parities because the value in the "Sig. (2-tailed)" is 0.607, 0.640, and 0.983 respectively which is more than 0.05, A descriptive cross-sectional study by Mohammed *et al.*, published in 2020 also found similar results concluding that uterus length (8.22 ± 1) commit (5 ± 0.84) cm, and thickness (3.99 ± 0.54) cm respectively [3]. In the current study no significant association between uterine width and number of parity because the value in the "Sig. (2-tailed)" is 0.640. Another descriptive cross-sectional study by Ahmed published in 2017 carried out in Hassaheesa teaching hospital had similar results that there was no significant correlation between uterus width and number of parity because the value in the "Sig. (2-tailed)" is 0.119 [26]. In the current study no significant association between uterine thickness and

number of parity because the value in the "Sig. (2-tailed)" is 0.983. Another descriptive cross-sectional study by Ahmed published in 2017 carried out in Hassaheesa teaching hospital had similar results that there is no significant correlation between uterus thickness and number of parity because the value in the "Sig. (2-tailed)" is 0.647 [26]. The current study showed that there is no correlation between the number of parity and patient's age with uterus length, width, and thickness. The similar findings were also concluded in previous studies by Mohammed *et al.*, 2020 [3] and Ahmed 2017 that also shows that there is no association of uterus sizes with age and frequency of parity in females [26].

CONCLUSIONS

In conclusion, the average uterus length 7.9 ± 1.15 , width 4.3 ± 0.77 , and thickness 3.5 ± 0.66 in diameters. The current study also found no correlation between the number of parities and the length, width, and thickness in diameters of the uterus. Furthermore, the study found that uterus length, width, and thickness in diameters had no significant link with patient age, weight, or height.

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