



Sudan University for Sciences and Technology

Collage of Graduate Studies



Evaluation of Parity Relation with Uterus Size using ultrasonography

**تحديد علاقة عدد الولادات مع حجم الرحم
باستخدام الموجات فوق الصوتية**

A thesis submitted for Partial Fulfillment of Requirements of M.Sc.
Degree in Medical Diagnostic Ultrasound

By:

Suhair Osman Hassan Ahmed

Supervisor:

Dr. Babiker Abd Elwahab Awad Alla

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الآية

قال تعالى :

بسم الله الرحمن الرحيم

(قُلْ لَوْ كَانَ الْبَحْرُ مِدَادًا لِكَلِمَاتِ رَبِّي لَنَفِدَ الْبَحْرُ

قَبْلَ أَنْ تَنْفَدَ كَلِمَاتُ رَبِّي وَلَوْ جِئْنَا بِمِثْلِهِ مَدَدًا)

صدق الله العظيم

سورة الكهف الآية (109)

Dedication

To soul of my husband

Atif Ali Hassan Ahmed

Who was encouraged me
To be the best for his daughters

I dedicate this study

Acknowledgement

First of all gate and thank for Allah to enabling me to do
this thesis

I would like to specially thank to Dr. Babiker Abdel
Wahab for supervising this thesis and for helping and
encouraging me

Also thank to my family, friends and department staff.

Abstract

This was a descriptive cross-sectional study aimed to determine relation between parity and size of uterus using ultrasounding which carried out in Hassaheza teaching hospital during period from October 2016 to January 2017.

There were 50 females scanned by ultrasound, all cases were multiparous women and in reproductive age which had age between 25-45 any nulliparous and menopausal patient was excluded from this study.

All cases scanned transabdominally using Toshiba power vision 6600, power vision 6000 and WED-9618c11 to evaluate uterine size

Data was collected using special data collection sheet designed to evaluate uterine size, female age, weight, uterine length, width and thickness.

Study found that; the main uterine size 7.1-8 x 3.1-4 x 4.1-5 cm, mean age of cases under study was 35.6 years with stander deviation 6.9 years, mean weight of group study 71.28 with stander deviation 11.4 and number of parity was 4.06 with stander deviation 2.2.

Study concluded that there was a strong positive correlation between parity and length of uterus while no any correlation with uterine width and thickness.

Study recommended that should be increasing the specialist hospital for obstetrics and gynecology diseases because they increased in Sudanese now days.

مستخلص البحث

تهدف هذه الدراسة الوصفية الي تحديد العلاقة بين حجم الرحم وتعدد الولادات باستخدام الموجات فوق الصوتية . وقد اجريت هذه الدراسة في مستشفى الحصاصيما التعليمي في الفترة من اكتوبر 2016 وحتى يناير 2017م.

قمت باجراء هذه الدراسة علي 50 سيدة في عمر الانجاب ما بين 25 – 45 سنة باجراء موجات فوق الصوتية عن طريق البطن. وقد كانت جميع النساء اللاتي اخضعن لهذه الدراسة قد سبق لهن الانجاب. وقد قمنا باستبعاد اللاتي لم ينجبن من قبل فضلا عن النساء في سن اليأس.

كل الحالات تم تصويرها عبر البطن باستعمال عده اجهزه توشيبا Power 6600 vision6000 and WED-9618c1

لتقييم حجم الرحم . تم جمع المعلومات عن طريق اوراق خاصه لتجميع البيانات مصممه لتقييم حجم الرحم ،وزن الام،عمرها،طول ارحم ،عرض الرحم وسمكه

وجدنا في هذه الدراسة ان حجم الرحم الاساسى $7.1-8-3.1 \times 4-4.1-5$ سم كما ان ومتوسط عمر الحالات كان 35.6 عام ووالانحراف المعياري 6.9 ومتوسط الوزن 71.28 والانحراف المعياري 11.4 و متوسط عدد الولادات 4.06 والانحراف المعياري 2.2

خلصت الدراسة الى ان هناك علاقة موجبه بين عدد الولادت وطول الرحم وعدم وجود علاقته بين عدد الولادات وعرض وسمك الرحم

اوصت الدراسة بزياده عدد المستشفيات المتخصصة في مجال امراض النساء والتوليد

نسبه لزيادتها في السودان حاليا

Table of Contents:

Subject	Page No.
الآية	I
Dedication	II
Acknowledgement	III
Abstract	IV
مستخلص البحث	V
List of Contents	VI
List of tables	VIII
List of figures	IX
Chapter one: Introduction	
1.1 Introduction of the study	1
1.2 Objectives	2
Chapter two: Literature review	
2.1 Anatomy of uterus	4
2.2 Physiology of human reproduction	10
2-3 Investigations done for uterus	12
2-4 Previous Studies	13
Chapter three: Materials and Method	
3.1 Materials	16
3.2 Design of the study	16
3.3 Population of the study	16

3.4 Sample size and type	16
3.5 Place and duration of the study	16
3.6 Methods of data collection	16
3.7 Technique	16
3-8 Data analysis	17
Chapters Four: Results and	
4.1 Results:	19
Chapter five	
Discussion, conclusion and recommendation	
5.1 Discussion	35
5.2 Conclusion	36
5.3 Recommendation	37
References	38
Appendices	

List of tables

Table No	Title	Page No
2-1	hormone levels in human maternal blood during normal pregnancy	12
4.1	frequency distribution of age, number of parity .weight, life fetus and length ,width thickness of uterus	19
4.2	frequency distribution of age	20
4.3	frequency distribution of parity	21
4.4	frequency distribution of weight	22
4.5	frequency distribution of number of life fetus	23
4.6	frequency distribution of number of aborted fetus	24
4.7	frequency distribution of length of the uterus	25
4.8	frequency distribution of width of the uterus	26
4.9	frequency distribution of thickness of the uterus	27
4.10	cross tabulation length of the uterus and number of parity	28
4.11	cross tabulation width of the uterus and number of parity	29
4.12	cross tabulation thickness of the uterus and number of parity	30
4.13	cross tabulation length of the uterus and weight of women	31
4.14	cross tabulation length of the uterus and number of abortion	32
4.15	correlation between age, weight, number of abortion and length ,width thickness of the uterus	33

List of Figures

Figure No	Title	Page No
4.1	frequency distribution of age	20
4.2	frequency distribution of parity	21
4.3	frequency distribution of weight	22
4.4	frequency distribution of number of life fetus	23
4.5	frequency distribution of number of aborted fetus	24
4.6	frequency distribution of length of the uterus	25
4.7	frequency distribution of width of the uterus	26
4.8	frequency distribution of thickness of the uterus	27
4.9	cross tabulation length of the uterus and number of parity	28
4.10	cross tabulation width of the uterus and number of parity	29
4.11	cross tabulation thickness of the uterus and number of parity	30
4.12	cross tabulation length of the uterus and weight of women	31
4.13	cross tabulation length of the uterus and number of abortion	32
4.13	scatter plot shows relationship between length of uterus and parity (the result shows that for increasing one parity the length of uterus increase by 0.1236)	32

Chapter one

Introduction

Introduction

1.1 Introduction:

During the embryonic period the uterus and kidneys develop at essentially the same time. There for safe to assume that when there are congenital anomalies recognized on routine sonogram within the uterus coexisting anomalies maybe present in the kidneys .

For this reason patient who present with uterine anomalies may also require urinary tract sonogram.

The uterus, vagina and fallopian tubes develop from the paired mullerian ducts (paramesonephric ducts) thus incomplete fusion ,partial fusion or agenesis of the mullerian ducts well result in an anatomic variant of the uterus ,cervix and /or vagina that maybe recognized sonographically .

The uterus is pear shape retroperitoneal organ that lies anterior to the rectum posterior to the urinary bladder and is pounded laterally by the broad ligament .it's a primary function is to provide aplace for uterine benign smooth muscle tumors of the uterus .

The uterine position within the pelvis is variable .the normal position of the uterus is considered to be ante version or anteflexion .anteversion describes the uterine position in which the body tilts forward forming 90 degree with the cervix.

Ante flexion of the uterus denotes the position in which the uterine body folds forwards and comes in contact with the cervix forming an acute angle between the body and the cervix

Retroflexion is the uterine position that results in the uterine body tilting backward and actually coming in contact with the cervix thus forming an acute angle between body and cervix

Retroversion of the uterus is the position in which the uterine body tilts backwards without a bend where the cervix and body meet

1.2 Objectives of the study:

1.2.1 General objective:

Evaluation of parity relation with uterine size using ultrasonography

1.2.2 Specific objective:

- 1.** To evaluate the normal and abnormal size of uterus.
- 2.** To correlate the uterine size length, width and thickness with number of parity.
- 3.** To correlate the uterine size with the age of female
- 4.** To correlate the uterine size with aborted fetus
- 5.** To correlate the uterine size with life fetus
- 6.** To correlate the uterine size with weight of female
- 7.** To correlate the uterine size with number of parity

Chapter two
Literature Review

2.1 Anatomy of uterus:

The uterus is a hollow, thick-walled and muscular organ .it is normally situated in the lesser pelvis between the urinary bladder and rectum (Susan-2008)

In the virginal state it is the shape of a flattened pear. Its size is about 8x 5x 3cm and it consists of fundus, body and cervix.

It receives uterine tubes and the cervix protrudes into the vault of the vagina where it opens. The fundus is the part above the entrance of the tubes it is convex and possesses a serous coat of the pelvic peritoneum which continues downwards over the front and back of the body

The body of the uterus tapers downwards from the fundus and is flattened anteroposteriorly (Chummy-2008)

Each upper angle at the junction of the fundus and body receives the uterine tubes the body is enclosed by peritoneum which laterally becomes the broad ligament the intestinal surface of the body faces upwards with coils of intestine lying upon it while the vesicle surface faces downwards resting on the bladder with the peritoneum of the vesicouterine pouch intervening

The cavity of the uterus occupies the body narrow slit in the virgin it enlarges during pregnancy by growth of the uterine walls to accommodate the fetus (Chummy-2008)

2.1.1 Blood supply of the uterus and uterine tubes:

The uterus is supplied by the uterine artery branch of the internal iliac it passes medially across the pelvic floor in the base of the broad ligament above the ureter to reach the side of the supravaginal part of the cervix giving a branch to the cervix and vagina the vessel turns upwards between the layers of the broad ligament to run in the tortuous manner alongside the uterus as far as the cornu giving off branches which penetrate the uterine

walls and anastomose across the midline with corresponding branches of the opposite uterine artery at the junction of uterus and uterine tube the artery turns laterally and ends by anastomosing with the tubal branch of the ovarian artery which supplies the uterine tube (chummy-2008)

The veins of the uterus course below the artery at the lower edge of the broad ligament where they form wide plexus across the pelvic floor (chummy-2008).

This communicates with the vesicle and rectal plexuses and drains to the internal iliac veins the tubal veins join the ovarian veins (chummy-2008)

2.1.2 Lymph Drainage:

Lymph from the cervix drains to external and internal iliac nodes and also to sacral nodes via the uterosacral ligament.

The lower part of the uterine body drains to external iliac nodes lymphatic from the upper part of the body. the fundus and the uterine tube accompany those from the ovaries to Para-aortic nodes few connect accompany the round ligament to reach the superficial inguinal nodes(chummy-2008)

2.1.3 Nerve Supply:

The nerves of the uterus are branches from the inferior hypogastric plexus the smooth muscle of the uterus is sensitive to hormonal influences.

The sympathetic supply is vasoconstrictor and also has facilitating function in relation to uterine muscle but division of all uterine nerves or high transection of the spinal cord does not affect uterine contractility even in labor .pain from the cervix is usually considered to be carried by

the pelvic splanchnic nerve although from the upper cervix it appears to run with sympathetic nerves as does pain from the body of the uterus

The cord segments concerned are T10-L1 and pain can be referred to the corresponding dermatomes however presacral neurotomy does not abolish labor pain although it may improve dysmenorrhea the abolition of uterine sensation requires the division of all nerves or transaction of the cord above T10 level as with most hollow viscera distension causes pain but both the cervix and body are relatively insensitive to cutting and burning in contrast the uterine tube is sensitive to touching and cutting (Last-2008)

2.1.4 Structure:

The bulk of the uterus is smooth muscle the myometrium whose fibers are often described as being in three layers but these are ill defined the outer muscle fibers tend to be longitudinal and expulsive in function while many of those more deeply placed are circular and act as sphincters round the layer blood vessels the opening of the uterine tubes and the internal os The mucous membrane or endometrium has an lining of columnar epithelium which dips down into the endometrial stroma to form the endometrial glands the thickness of course varies with the different stages of the menstrual cycle at menstruation the bases of the glands remain to provide the source for the new epithelial covering (chummy-2008)

The mucosa of the cervix does not take part in the cyclical changes and is not shed at menstruation the bases of the glands remain to provide the source for the new epithelial covering the mucosa of the cervix does not take part in the cyclical changes and is not shed at menstruation the surface cells are mucus secreting and there are also mucous glands just inside the external os the epithelium changes to stratified squamous

variety of the vagina the outer or serous covering of the uterus is the peritoneum (Last -2008)

2.1.5 Supports:

The normal position of the uterus is one of ante flexion and ante version i.e. the funds and upper part of the body are bent forward in relation to the long axis of the cervix while the organ thus flexed leans forward as whole from the vagina the external os thus opens through the anterior wall of the vagina as many as 20% of nulliparous females may have introverted uterus without any ill effects the most fixed part of the uterus is the cervix because of its attachment to the back of the bladder and to the vaginal fornix and number of structures help directly or indirectly to maintain the normal position these include the pelvic diaphragm condensation of visceral pelvic fascia forming ligaments and to lesser extent peritoneal attachments (chummy-2008)

The pubovaginalis part of levator ani and the perineal body with its inserted muscles support the vagina and so assist indirectly in holding the cervix up if these muscles are unduly stretched or damaged during childbirth the posterior vaginal wall sinks downwards and this is often followed by prolapsed or retroversion of the uterus (chummy-2008).

The broad ligament is not strictly speaking alignment in the usual sense as it consists of no more than a lax double fold of peritoneum lying lateral to the uterus and it plays little part in uterine support its medial edge is attached to the side wall of the uterus and flows over its intestinal and vesicle surfaces as its serous coat The lateral edge is attached to the side wall of the pelvic the two layers of its inferior edge or base pass forwards and backwards to line the pelvic cavity as the posterior layer does so it has the ureter adhering underneath it the line of lateral attachment

crosses the obturator nerve superior vesicle or obliterated umbilical vessels and the obturator artery and vein

The upper border of the broad ligament is free forming the mesosalpingx and containing the uterine tube the upper lateral part of the broad ligament contains the ovarian vessels and lymphatic's and is extended over the external iliac vessels as a fold the suspensory ligament of the ovary (chummy-2008).

The anterior layer of the broad ligament is bulged forwards by the round ligament of the uterus just below the uterine tube the posterior layer has a fold projecting backwards suspending the ovary the mesovarium.

Between the two layers of the broad ligament is a mass of areola tissue the parametrium in which lie the uterine vessels and lymphatic's the round ligament of the uterus the ligament of the ovary and vestigial remnants of mesonephric tubules .The round ligament of the uterus extends from the junction of the uterus and tube to the deep inguinal ring

It lies in the broad ligament below the uterine tube and bulges the anterior layer of the ligament forwards .Through its uterine attachment it is continuous with the ligament the gubernaculum the round ligament passes through the inguinal canal and is attached at its distal extremity to the fib fatty tissue of the labium majors of the vulva It is supplied by a branch of the ovarian artery in the broad ligament and by a branch from (chummy-2008).

The inferior epigastric artery in the inguinal canal .It consists of smooth muscle and fibrous tissue and it acts to hold the uterus forwards in ante flexion and ante version especially when forces tend to bush the uterus backwards (chummy-2008)

The transverse cervical ligament consists of thickenings of connective tissue in the base of each broad ligament extending from the cervix and vaginal fornix laterally to the side wall of the pelvis

The ureter, uterine artery and inferior hypogastric plexus traverse the connective tissue of the ligament. It imparts lateral stability to the cervix and is an important support of the uterus. The uterosacral ligaments comprising fibrous tissue and smooth muscle extend backwards from the cervix below the peritoneum embracing the recto uterine pouch and rectum and becoming attached to the front of the sacrum. They are palpable on rectal examination. They keep the cervix braced backwards against the forward pull of the round ligaments on the fundus and so maintain the body of the uterus in ante version (last-2008).

2.1.6 Embryology:

When the second part of the paramesonephric ducts moves medio-caudally, the urogenital ridges gradually come to lie in transverse plane. After the ducts fuse in the midline a broad transverse pelvic fold is established. This fold which extends from the lateral sides of the fused paramesonephric ducts toward the wall of the pelvis, is the broad ligament of the uterus. The uterine tube lies in its upper border and the ovary lies on its posterior surface. (Saddler-2010)

The uterus and broad ligaments divide the pelvic cavity into the uterorectal pouch

2-1-7 Summary:

Blood supply of the uterus by uterine artery from the internal iliac artery and the ovarian artery from the abdominal aorta. Veins correspond to arteries and lymph drainage to internal iliac and Para-aortic nodes. Nerve supply by

sympathetic and parasympathetic nerves from the inferior hypogastric plexus (Snell-2012)

2.2 Physiology of human reproduction:

The hormonal control of reproduction in male and female is determined by the interaction of three glands the hypothalamus the anterior pituitary and the gonads the ovaries in female and testes in males (M.Y.Sukkar-2000)

The gonads secrete the sex steroid hormones oestrogen and progesterone in females and testosterone in males.

These are the main hormones responsible for the sexual characteristics and regulation of reproductive function of males and females the interrelationship between the hypothalamic pituitary gonadal systems can be summarized as follows (. M.Y.Sukkar-2000)

The hypothalamus secretes a decapeptide hormone known as gonadotrophin releasing hormone (GnRH).(M.Y.Sukkar-2000)

GnRH reaches the anterior pituitary along the hypothalamic pituitary portal vessels it acts on the anterior pituitary to increase the synthesis storage and secretion of the gonadotrophins luteinizing hormone (LH) and follicle stimulating hormone (FSH)(M.Y.Sukkar-2000)

The gonadotrophins are normally secreted in pulsatile manner 60-120min

Both FSH and LH act directly on gonads to stimulate sex steroid hormone secretion other endocrine glands are also required for normal reproductive function e.g. the adrenal cortex and thyroid .Higher cerebral centers have important influences on the normal development and functions of the hypothalamic pituitary axis. Therefore factors such as nervous stress and

social or mental disorders can affect normal maturity and functions of the reproductive organs (M.Y.Sukkar-2000)

The differences between females and males do not only lie in the type of sex steroid hormones secreted but also in the pattern of secretion of hypothalamic pituitary gonadotrophins and the relationship between the gonads and the hypothalamic pituitary system .(M.Y.Sukkar-2000)

2.2.1 The uterus:

In childhood the cervix is about twice the length of the uterine body. During puberty the body of the uterus grows so that it increases to about twice the length of the cervix.

Its muscle fibers also increase in bulk .The cervical glands secrete a mucous secretion .The lining of the uterus the endometrium proliferates under the effect of estrogens and subsequently responds to progesterone .These cycles are responsible for the onset of menstruation(M.Y.Sukkar-2000).

2.2.2 Fertilization:

Fertilization is the process of penetration of the oocyte by the spermatozoon .It marks the beginning of the formation of the embryo .Fertilization normally occurs soon after ovulation for the ovum remains viable for only about 8 hours.

After deposition of sperms in the upper vagina they penetrate the mucus of the cervical canal into the uterus and reach the outer third of the fallopian tube where fertilization usually takes place .The cervical canal acts as a reservoir for sperm for about 24-48hours .Fertilization can occur as long as 72hours after intercourse .Sperms reach the fallopian tubes 5-10minutes after ejaculation .They proceed by flagella motion at about 5-6cm\min which is not enough to explain their rapid ascent .It is believed that uterine

contraction and ant peristaltic movement of the fallopian tubes help their progress .The ovum on the other hand is helped to descend down the tube by the action of cilia which beat in the opposite direction i.e. towards the uterus .Of about half a billion sperm deposited only 1000-3000reach the fallopian tubes .(M.Y.Sukkar-2000)

The spermatozoa have to undergo a number of physiological changes during their course in the female genital tract before they are able to penetrate the oocyte .i.e. cap citation and the acrosome reaction M.Y.Sukkar-2000).

Table (2-1) Shows hormone levels in human maternal blood during normal pregnancy (William -2005)

Hormone	Approximate peak values	Time of peak secretion
Hcg	5mg/ml	First trimester
relaxin	1ng/ml	First trimester
hcs	15mg/ml	Term
Estradiol	16ng/ml	Term
Estriol	14ng/ml	Term
Progesterone	190ng/ml	Term
Prolactin	200ng/ml	Term

2-3 Investigations done for uterus:

2-3-1-1 complet heamogram2 (CBC):

To evaluate the mothers Hb because iron deficiency anemia is the major cause of death in developing canteries and platelet also important in bleeding which of the serious complication during labor.

2-3-1-2 Blood grouping and cross matching:

These using for preparing the blood before delivery:

2-3-1-3 Urine general:

Because protein in the urine is indication of high blood pressure also glucose in urine is indication of gestational diabetes mellitus.

2-4 Previous Studies:

HajiAhmedi aimed to determine the efficacy of ultrasonographic assessment of uterus size in women of reproductive age, they conducted a cross-sectional analytic study of 231 women aged 15-45 years in Babol, northern Islamic Republic of Iran. Mean uterus size was 86.6 mm X 49.6 mm X 40.6 mm overall, 72.8 mm X 42.8 mm X 32.4 mm for nulliparous women and 90.8 mm *51.7 mm *43.0 mm for multiparous women. Mean age was 31.7+/-9.6 years and mean body mass index {BMI} was 24.7+/-4.0kg/m². Uterus size was significantly associated with parity and age; but not with BMI. His findings show a greater mean uterus size than reported by others. Ultrasonographic measurement of uterus size is valuable for predicting pathologies associated with abnormal uterine size.

MerzE¹, Miric- Tesanic D, Bahlmann E, Weber G, Wellek S. aimed to

Uterine and ovarian sizes there measured in 765 pre- and postmenopausal women by transvaginal ultrasound. Of these, 263 {premenopausal, n=155; postmenopausal, n=108} there found to have neither uterine nor ovarian pathological finding. According to parity, premenopausal women were separated into three groups: nullipara, primipara and multipara. Postmenopausal women there separated into two groups according to years since menopause: or=5 years and 5 years since menopause. In the premenopausal group, a parity-related enlargement in uterine size was observed between nulliparous and porous women. After the menopause, a significant reduction in uterine size and in the corpus-cervix ratio was observed. The reduction in uterine size was related to years since menopause. The endometrial thickness measured in the group of premenopausal women did not exceed 4 mm on day 4 and 8 mm on day 8 of the menstrual cycle; in the postmenopausal group, endometrial thickness did

not exceed 5 mm {mean3.6 mm}. In the group of premenopausal women, no parity-related change in ovarian volume was observed. After menopause, there was an obvious reduction in ovarian volume. Between the two postmenopausal groups, there was a small but significant difference in ovarian volume.

Chapter Three

Materials and Method

3.1.3 Material & Method

SK-10.Transabdominal curvilinear probe

Toshiba power vision 6600

Power vision 6000

Sonoscape

WED-9618CII (FULL Digital Ultrasostic System)

3.1 Design of the study:

This study is cross section study used uterus ultrasound images for normal patient

3.2 Population of the study:

The population of this study was females who's pried in age of reproductive age in Hassahesa teaching hospital

3.3 Sample size and type:

This study consisted of 50 patient's .in main age 35.6 the maximum age 45and minimum21years, maximum parity 9and minimum 1

3.4 Place and duration of the study:

This study was carried out in the period from Oct2016 to Junery 2017 in hasshesa teaching hospital

3.5 Methods of data collection:

Using a special data collection sheet , sample of 50 patients with normal female abdominal ultrasound scanning and data was collected using a data collecting sheet which designed to evaluate uterus anatomy, size, texture, shape, and measuring uterine diameters

3.6 Technique: (Imaging protocols)

3.7 Trans abdominal U/S scanning:

(A) Patient Preparations:

The bladder must be full enough, gives patient 4 to 5 glasses of fluid and examined after one hour. Do not allow the patient to micturate, alternatively

fill the bladder through a urethral catheter with sterile normal saline, Stop when patient feels uncomfortable.

(B) Position of the patient:

The patient should lie supine. The patient should be relaxed, lying comfortably and breathing quietly, lubricates the lower abdomen with coupling agent. Hair anywhere on the abdomen will trap air bubbles so apply coupling agent generously. ⁽⁴⁹⁾

(C) Choice of transducer:

Uses a curve linear probe of 3.5 MHZ frequency

(D) Scanning technique

The patients were consented and lied in supine position .coupling gel was applied to ensure good acoustic contact between the transducer and skin and allow optimum transmit ion of the sound beam.

For Trans abdominal technique the patients were examined in supine position through full urinary bladder, applying adequate amount of gel, transducer (3-5MHZ) was placed in contact with skin above to the symphysis pubis and longitudinal and transverse planes were obtained.

The Trans abdominal approach visualizes the entire pelvis and gives global overview. Its maim limitation involve the examination of patients unable to fill the bladder, obese patients or patients with retroverted uterus ,in whom the funds may be located beyond the focal zone the transducer(Rumack-2011)

3-8 Data analysis

The data was analyzed by statical package for social sciences (SPSS)

Chapter Four

Results

Table (4.1) shows frequency distribution of age, number of parity .weight, life fetus and length ,width thickness of uterus

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Age	50	21.00	45.00	35.6000	6.92820
No of parity	50	1.00	9.00	4.0600	2.23525
Weight	50	50.00	100.00	71.2800	11.41971
Life fetus number	50	.00	9.00	3.4200	2.05128
Length of uterus	50	5.10	9.40	7.5140	.94976
Width of uterus	50	2.50	5.70	4.1260	.83881
Thickness of uterus	50	3.20	7.70	4.9540	.89971
Valid N (listwise)	50				

Table (4.2) frequency distribution of age

Age group	Frequency	Percent	Valid Percent	Cumulative Percent
20-30 years	14	28.0	28.0	28.0
31-40 years	22	44.0	44.0	72.0
more than 40 years	14	28.0	28.0	100.0
Total	50	100.0	100.0	

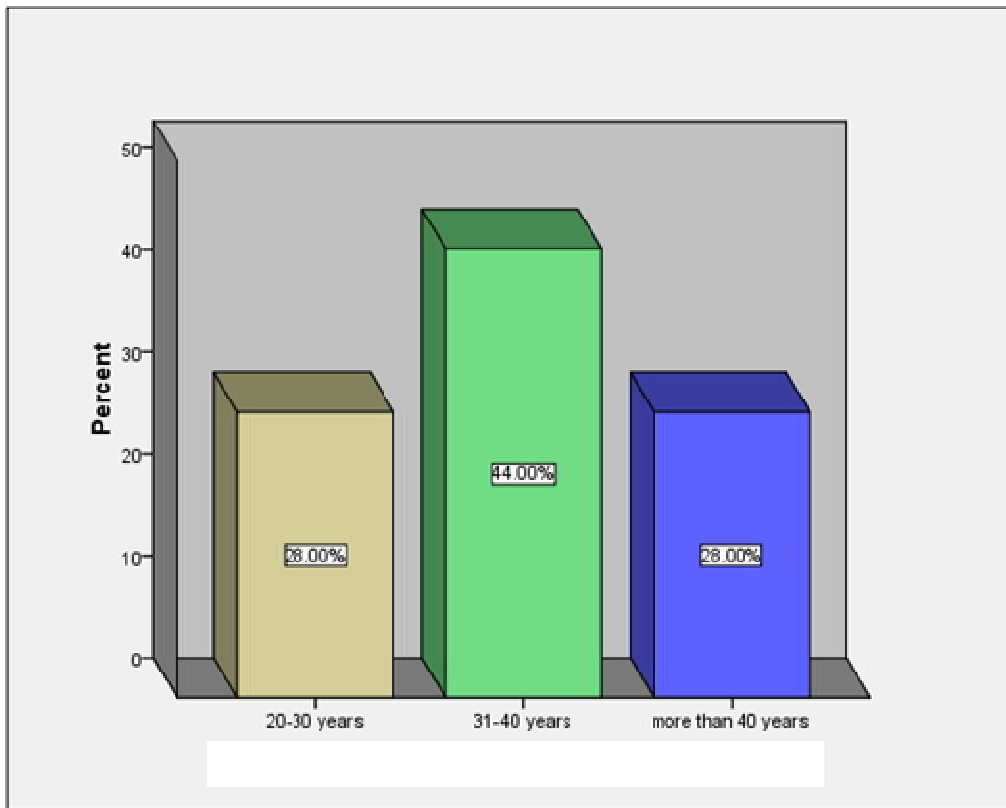
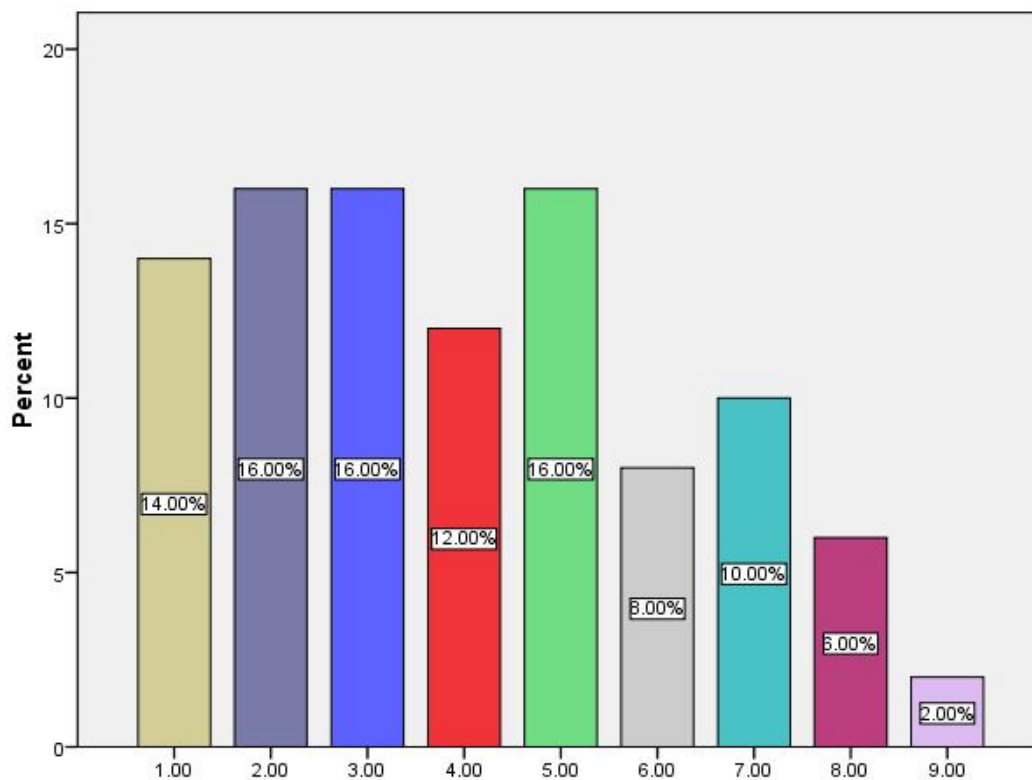


Figure (4.1) frequency distribution of age group

Table (4.3) frequency distribution of parity

No of parity	Frequency	Percent	Valid Percent	Cumulative Percent
1	7	14.0	14.0	14.0
2	8	16.0	16.0	30.0
3	8	16.0	16.0	46.0
4	6	12.0	12.0	58.0
5	8	16.0	16.0	74.0
6	4	8.0	8.0	82.0
7	5	10.0	10.0	92.0
8	3	6.0	6.0	98.0
9	1	2.0	2.0	100.0
Total	50	100.0	100.0	



Figure(4.2) frequency distribution of parity number

Table (4.4) frequency distribution of weight

Weight	Frequency	Percent	Valid Percent	Cumulative Percent
50-60 kg	8	16.0	16.0	16.0
61-70 kg	19	38.0	38.0	54.0
71-80 kg	13	26.0	26.0	80.0
81-90 kg	8	16.0	16.0	96.0
91-100 kg	2	4.0	4.0	100.0
Total	50	100.0	100.0	

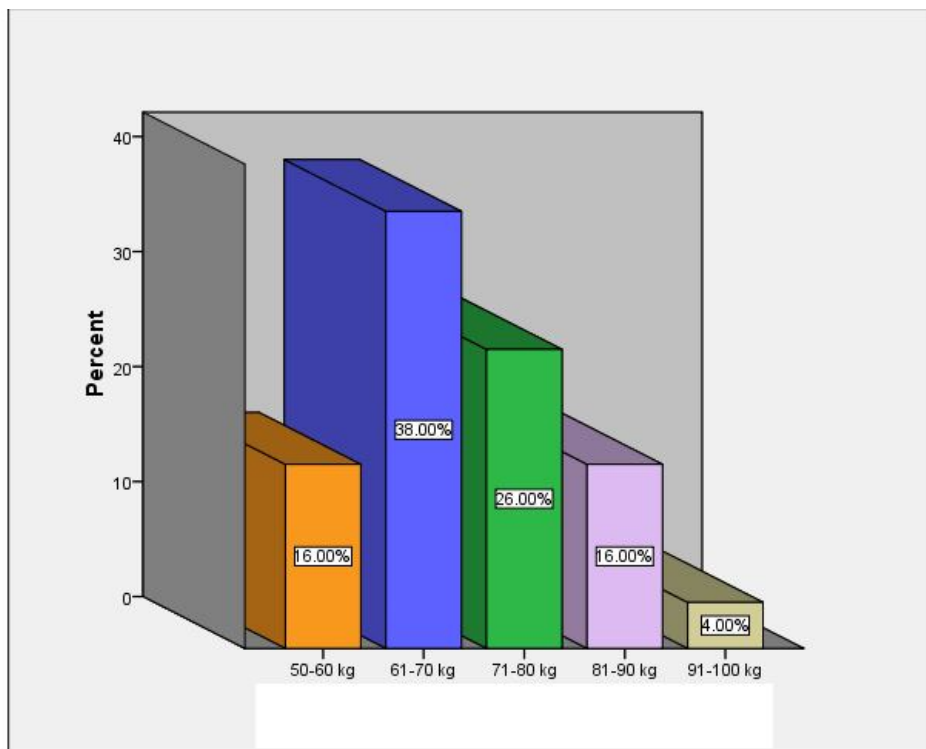


Figure (4.3) frequency distribution of weight

Table (4.5) frequency distribution of number of life fetus

Life fetus number	Frequency	Percent	Valid Percent	Cumulative Percent
0	1	2.0	2.0	2.0
1	10	20.0	20.0	22.0
2	10	20.0	20.0	42.0
3	5	10.0	10.0	52.0
4	8	16.0	16.0	68.0
5	6	12.0	12.0	80.0
6	8	16.0	16.0	96.0
7	1	2.0	2.0	98.0
9	1	2.0	2.0	100.0
Total	50	100.0	100.0	

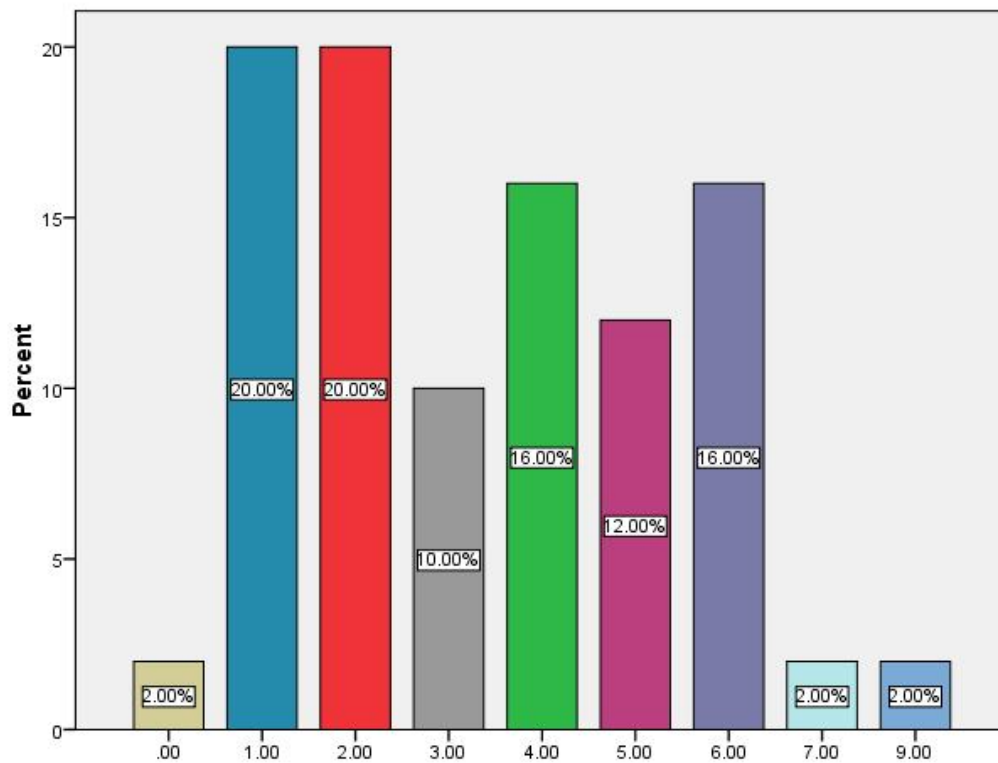


Figure (4.4) Frequency distribution of number of live fetus

Table (4.6) frequency distribution of number of aborted fetus

No of abortion	Frequency	Percent	Valid Percent	Cumulative Percent
0	30	60.0	60.0	60.0
1	14	28.0	28.0	88.0
2	4	8.0	8.0	96.0
3	1	2.0	2.0	98.0
6	1	2.0	2.0	100.0
Total	50	100.0	100.0	

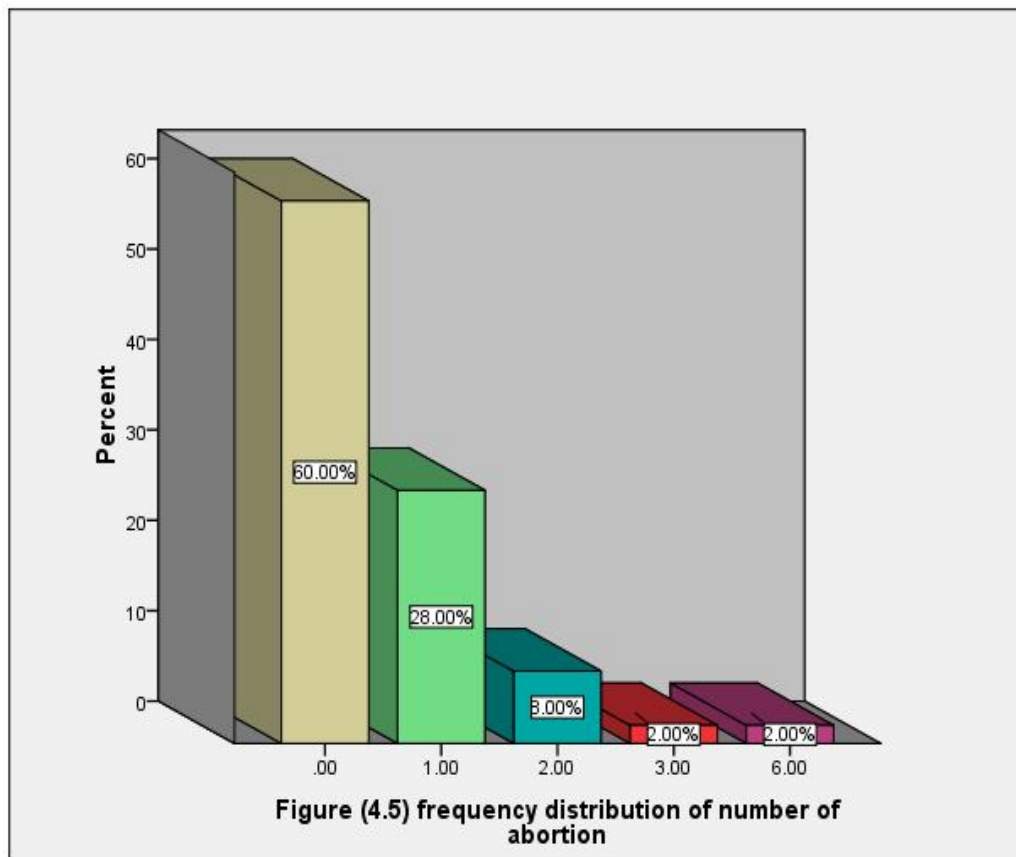


Table (4.7) frequency distribution of length of the uterus

Length of uterus	Frequency	Percent	Valid Percent	Cumulative Percent
5-6 cm	5	10.0	10.0	10.0
6.1 - 7cm	9	18.0	18.0	28.0
7.1-8 cm	22	44.0	44.0	72.0
8.1-9 cm	13	26.0	26.0	98.0
more than 9 cm	1	2.0	2.0	100.0
Total	50	100.0	100.0	

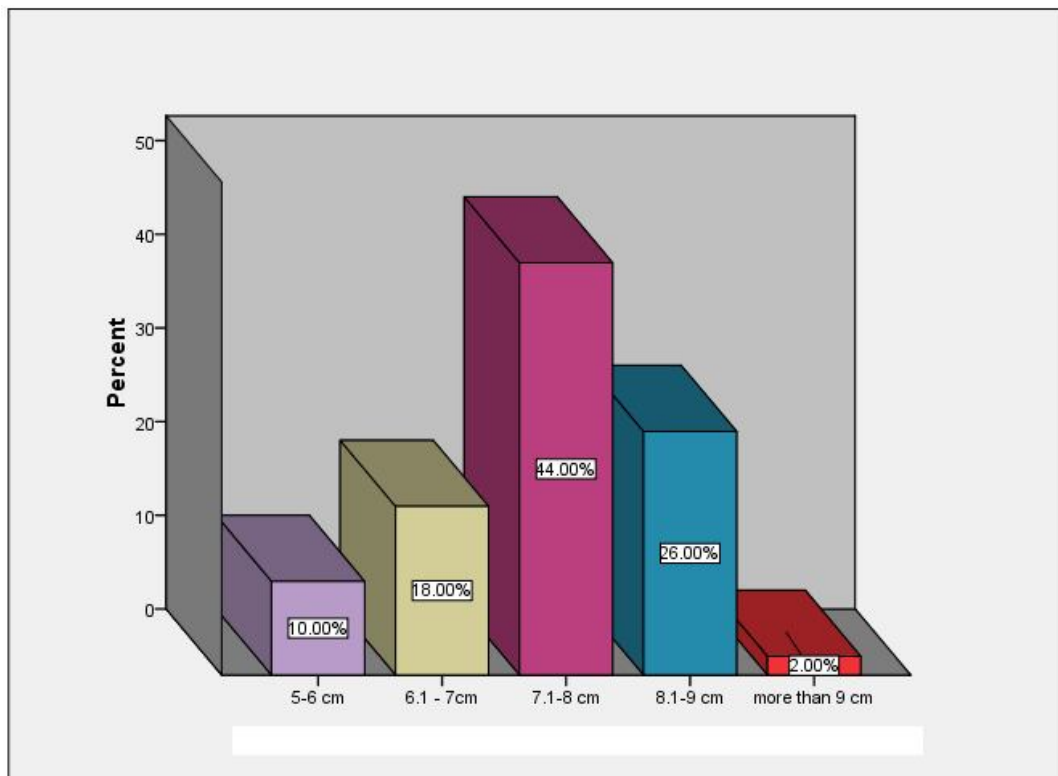


Figure (4.6) frequency distribution of length of the uterus

Table (4.8) frequency distribution of width of the uterus

Width of uterus	Frequency	Percent	Valid Percent	Cumulative Percent
2-3 cm	5	10.0	10.0	10.0
3.1-4 cm	23	46.0	46.0	56.0
4.1-5cm	15	30.0	30.0	86.0
more than 5cm	7	14.0	14.0	100.0
Total	50	100.0	100.0	

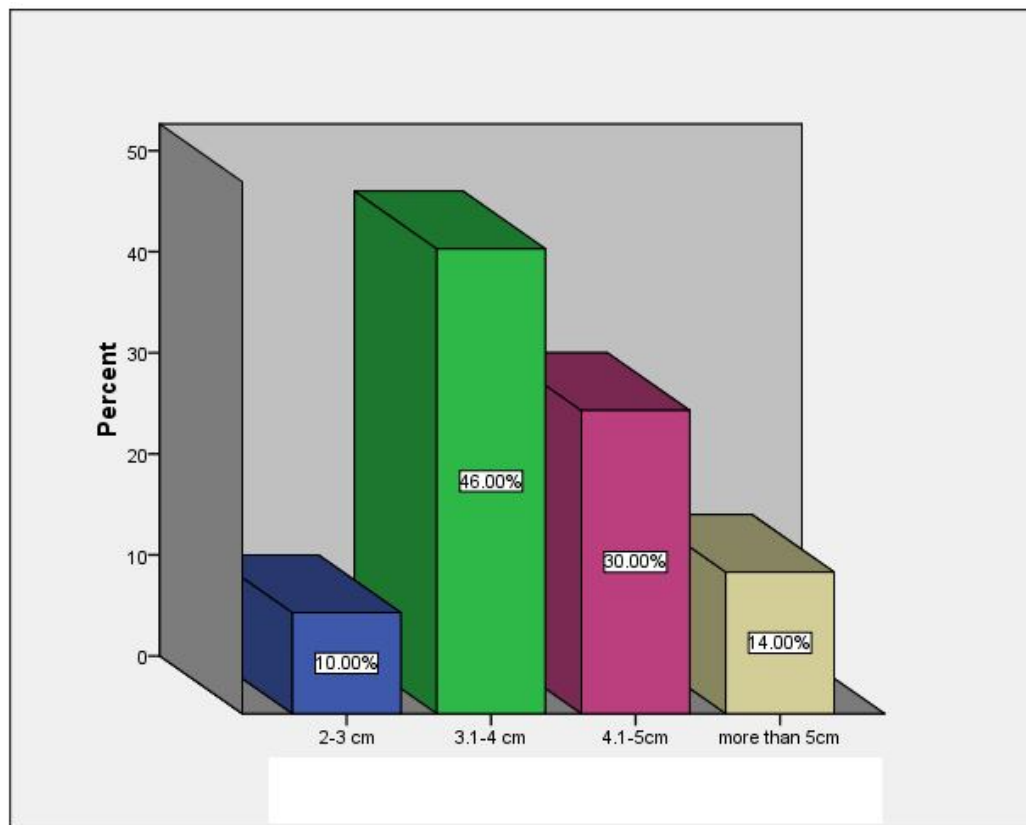


Figure (4.7) frequency distribution of width of uterus

Table (4.9) frequency distribution of thickness of the uterus

Thickness of uterus	Frequency	Percent	Valid Percent	Cumulative Percent
3-4cm	8	16.0	16.0	16.0
4.1-5 cm	26	52.0	52.0	68.0
5.1-6 cm	11	22.0	22.0	90.0
6.1-7 cm	4	8.0	8.0	98.0
7.1-8 cm	1	2.0	2.0	100.0
Total	50	100.0	100.0	

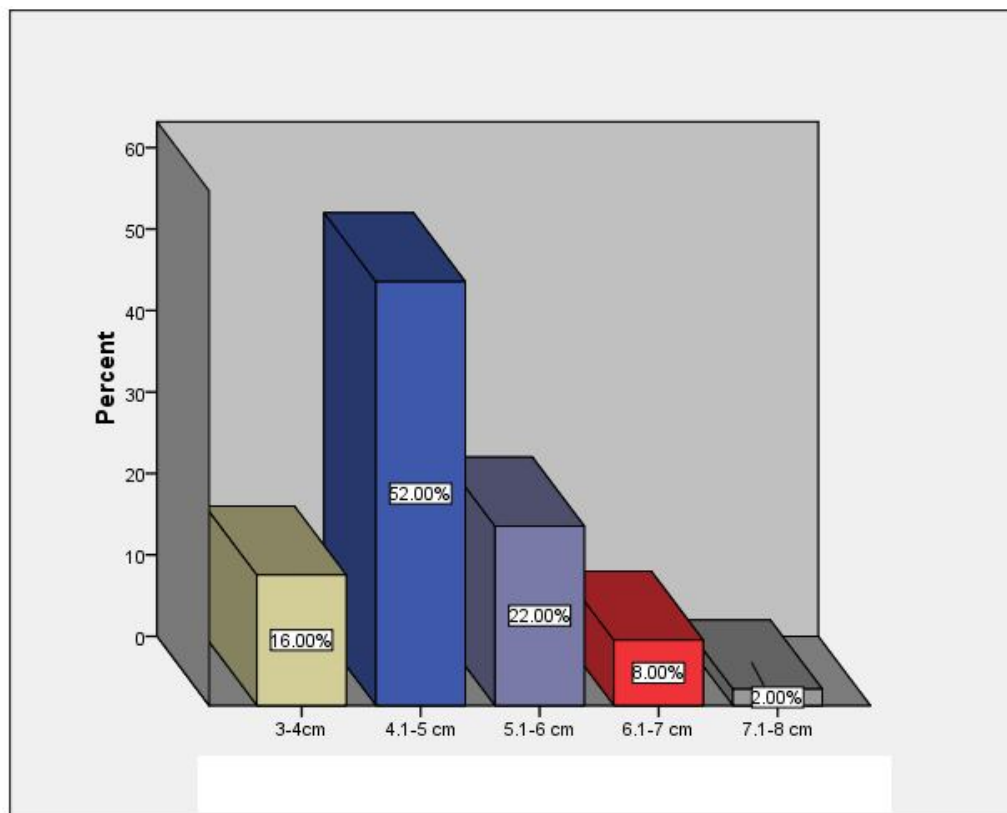


Figure (4.8) frequency distribution of thickness of the uterus

Table (4.10) cross tabulation length of the uterus and number of parity

No of parity	Length of the uterus					Total
	5-6 cm	6.1 - 7cm	7.1-8 cm	8.1-9 cm	more than 9 cm	
1	3	0	2	2	0	7
2	1	2	3	2	0	8
3	1	2	4	1	0	8
4	0	0	4	2	0	6
5	0	3	1	3	1	8
6	0	0	4	0	0	4
7	0	2	2	1	0	5
8	0	0	1	2	0	3
9	0	0	1	0	0	1
Total	5	9	22	13	1	50

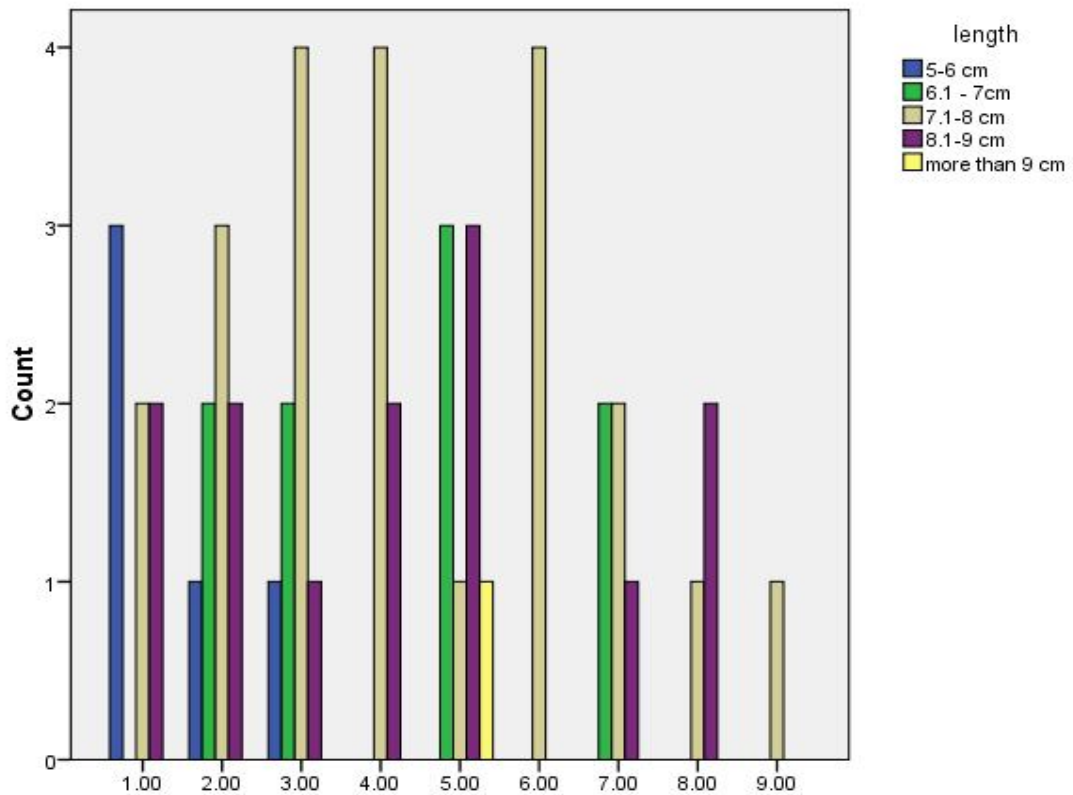


Figure (4.9) coss tab parity and length of uterus

Table (4.11) cross tabulation width of the uterus and number of parity

Parity	Width of uterus				Total
	2-3 cm	3.1-4 cm	4.1-5cm	more than 5cm	
1	3	2	1	1	7
2	1	5	2	0	8
3	0	5	3	0	8
4	0	2	3	1	6
5	1	2	1	4	8
6	0	2	2	0	4
7	0	2	2	1	5
8	0	2	1	0	3
9	0	1	0	0	1
Total	5	23	15	7	50

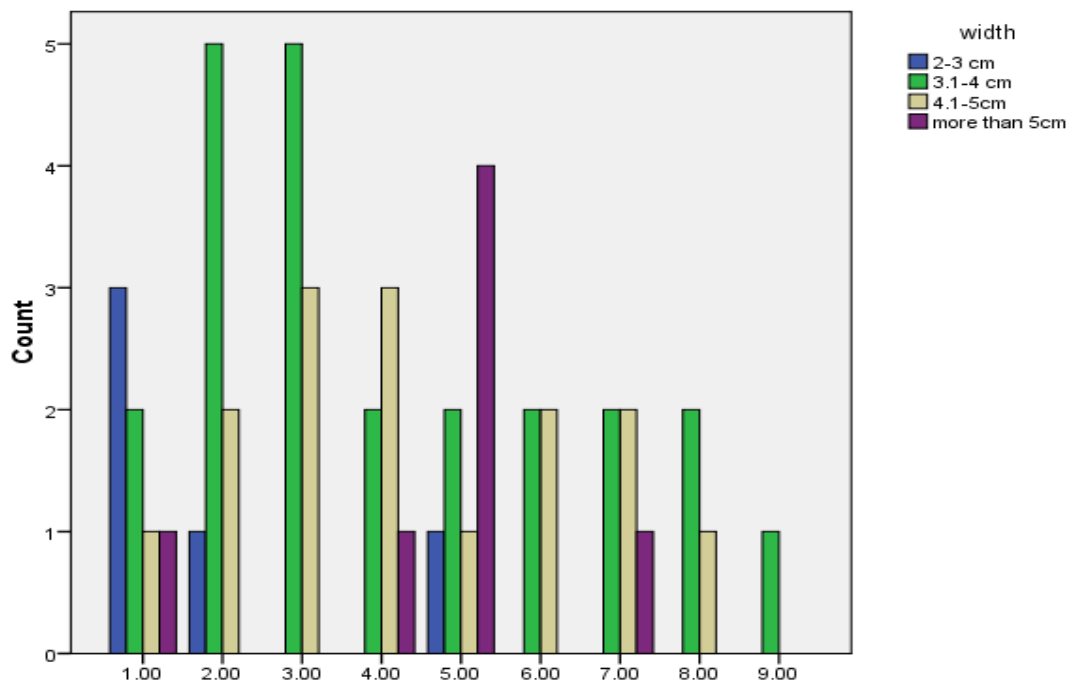


Figure (4.10) cross tab parity and width of uterus

Table (4.12) cross tabulation thickness of the uterus and number of parity

Parity	Thickness of uterus					Total
	3-4cm	4.1-5 cm	5.1-6 cm	6.1-7 cm	7.1-8 cm	
1	0	6	1	0	0	7
2	1	6	1	0	0	8
3	1	2	4	0	1	8
4	1	3	1	1	0	6
5	3	4	0	1	0	8
6	1	2	1	0	0	4
7	0	1	2	2	0	5
8	1	1	1	0	0	3
9	0	1	0	0	0	1
Total	8	26	11	4	1	50

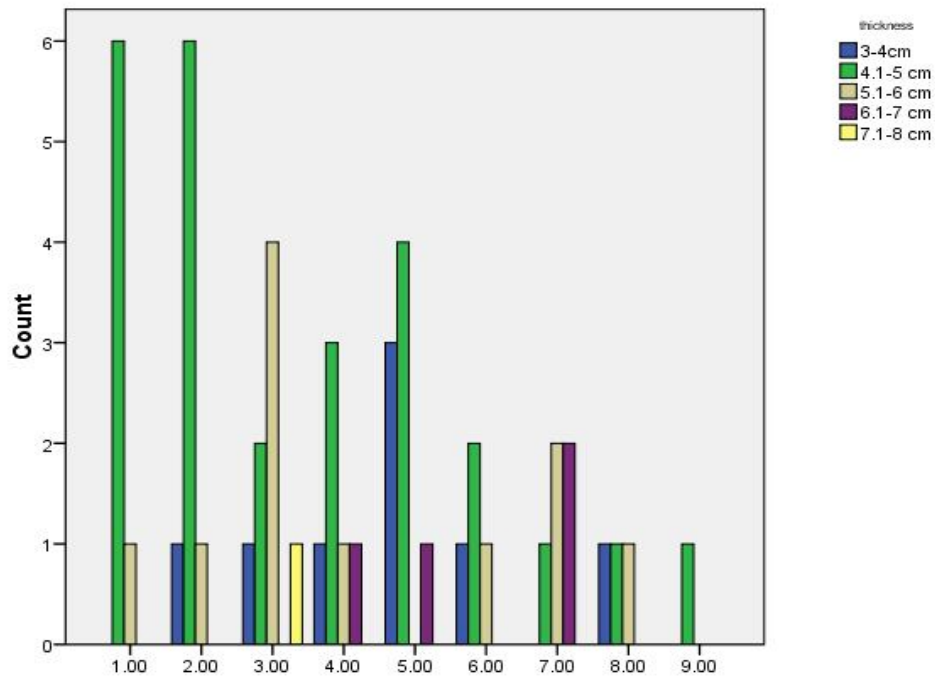


Figure (4.11) cross tab parity number and thickness of uterus

Table (4.13) cross tabulation length of the uterus and weight of women

Weight	Length of uterus					Total
	5-6 cm	6.1 - 7cm	7.1-8 cm	8.1-9 cm	more than 9 cm	
50-60 kg	2	3	2	1	0	8
61-70 kg	3	3	10	3	0	19
71-80 kg	0	2	7	4	0	13
81-90 kg	0	0	2	5	1	8
91-100 kg	0	1	1	0	0	2
Total	5	9	22	13	1	50

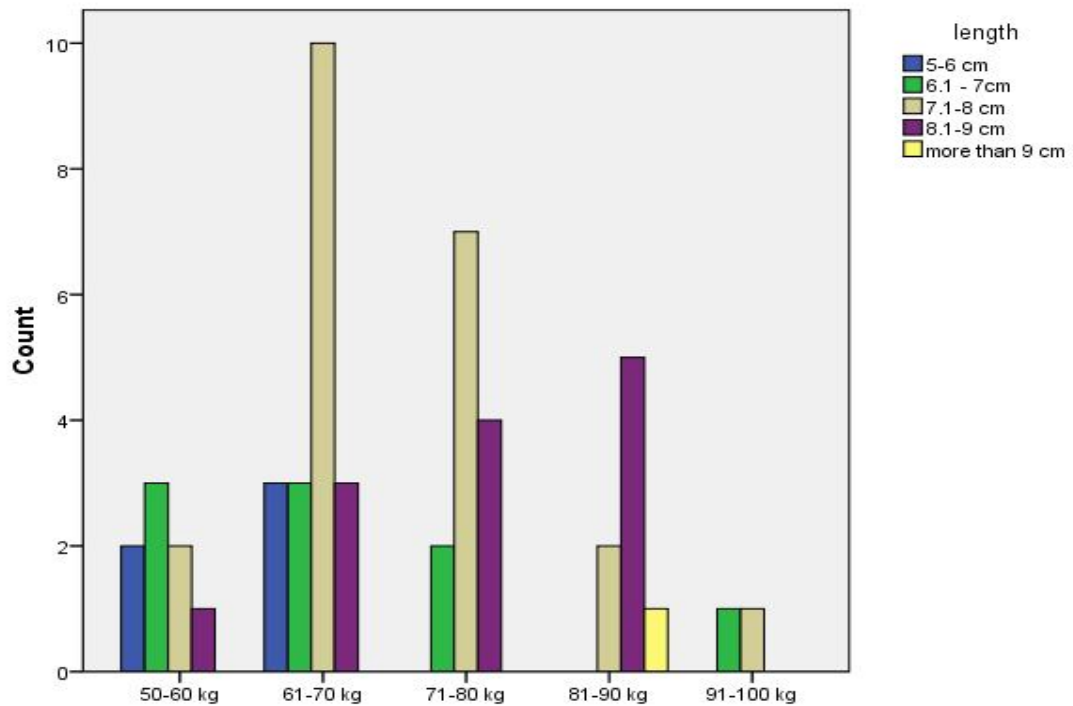


Figure (4.12) cross tab weight of women and length of uterus

Table (4.14) cross tabulation length of the uterus and number of abortion

Length	aborted					Total
	0	1	2	3	6	
5-6 cm	4	1	0	0	0	5
6.1 - 7cm	5	3	0	1	0	9
7.1-8 cm	14	8	0	0	0	22
8.1-9 cm	6	2	4	0	1	13
more than 9 cm	1	0	0	0	0	1
Total	30	14	4	1	1	50

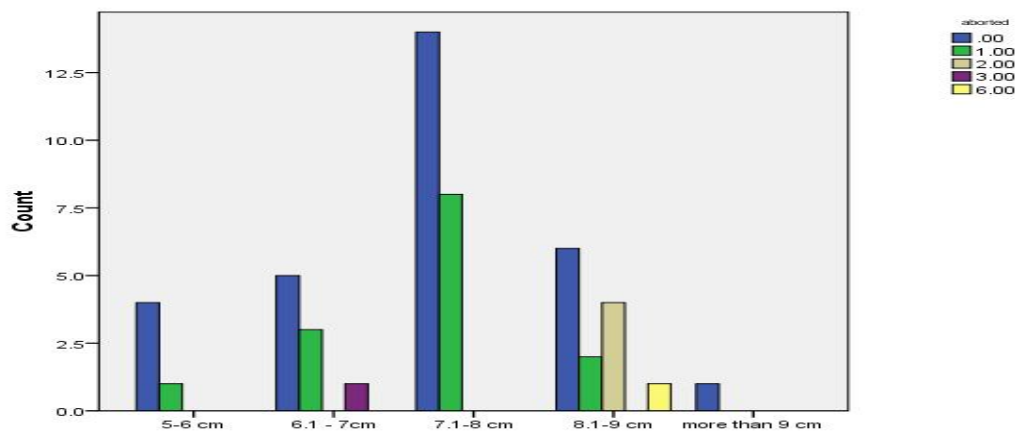


Figure (4.13) cross tab length of uterus and number of abortion

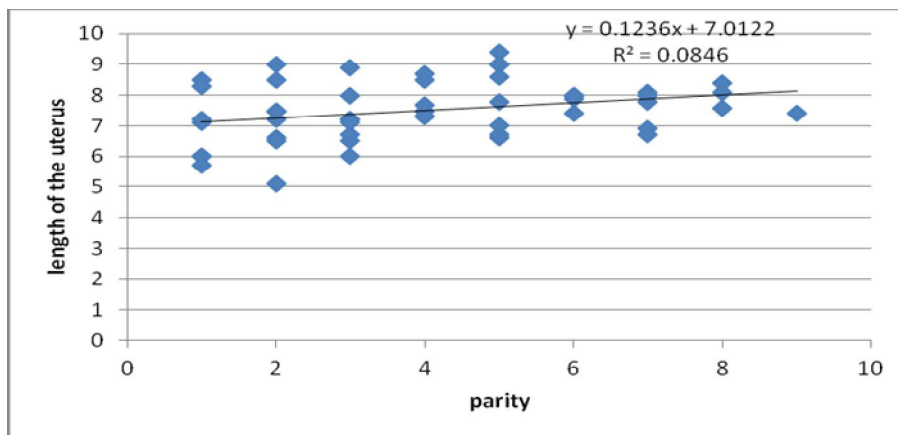


Figure (4.13) scatter plot shows relationship between length of uterus and parity (the result shows that for increasing one parity the length of uterus increase by 0.1236)

Table (4.15) correlation between age, weight, number of abortion and length ,width thickness of the uterus

		age	Parity	Weight	aborted	Length of uterus	Width of uterus	Thickness Of uterus
Age	Pearson Correlation	1	.575**	.207	.203	.025	-.052-	.089
	Sig. (2-tailed)		.000	.150	.158	.861	.720	.539
	N	50	50	50	50	50	50	50
Parity	Pearson Correlation	.575**	1	.244	.395**	.291*	.223	.066
	Sig. (2-tailed)	.000		.088	.005	.040	.119	.647
	N	50	50	50	50	50	50	50
Weight	Pearson Correlation	.207	.244	1	.044	.365**	.341*	.004
	Sig. (2-tailed)	.150	.088		.761	.009	.016	.977
	N	50	50	50	50	50	50	50
Number of abortion	Pearson Correlation	.203	.395**	.044	1	.205	-.023-	-.014-
	Sig. (2-tailed)	.158	.005	.761		.154	.874	.921
	N	50	50	50	50	50	50	50
Length of uterus	Pearson Correlation	.025	.291*	.365**	.205	1	.620**	.072
	Sig. (2-tailed)	.861	.040	.009	.154		.000	.620
	N	50	50	50	50	50	50	50
Width of uterus	Pearson Correlation	-.052-	.223	.341*	-.023-	.620**	1	.273
	Sig. (2-tailed)	.720	.119	.016	.874	.000		.055
	N	50	50	50	50	50	50	50
Thicknes of uterus	Pearson Correlation	.089	.066	.004	-.014-	.072	.273	1
	Sig. (2-tailed)	.539	.647	.977	.921	.620	.055	
	N	50	50	50	50	50	50	50

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Chapter Five
Discussion, Conclusion and
Recommendations

Discussion, Conclusion and recommendations

5.1 Discussion:

This a descriptive cross sectional study aimed to evaluate determination of relation between parity and size of uterus in which there were 50 female scanned trans abdominal using Toshiba power vision 6600.

Refer to table 4.1 the main age of cases under study 35.6 with std deviation 6.92820. On the same table, the mean of mean parity number was 4.0600 with std deviation 2.24, mean of female weight was 71.3kg with std deviation 11.42 kg, mean of lived fetuses number was 3.4 with std deviation 2.1, mean of urine length 7.5 cm with std deviation 0.95cm cm, mean of uterine width 4.1260 cm with std deviation 0.84 cm and mean of uterine thickness was 4.95 cm with std deviation 0.9 cm.

In table (4.2) which shows distribution of age group, the most affected age group was 31- 40 (44%), table (4.3) shows the highest parity was 8 with frequency 3, the higher affected weight group was 61 – 70 frequency 19 cases (38%) table (4.4).

Most life fetus distribution were 1 & 2 frequency 10 cases (20%) table (4.5), while most cases under study had not history of abortion 30 cases (60%), table 4.6

Study show that increasing of parity had positive correlation uterine size increase with 0.1236 same result achieved with Esmaelzadeh S, Rezaei N, Haji Ahmedi M.

In table 4-15 relation between weight of women and length of the uterus .009 and width of uterus .016 is significant also correlation between parity and age of women.000and aborted fetus .005 and length of the uterus .040 and correlation between width of the uterus and weight of the women .016.

5.2 Conclusion

This study was approved it is hypothesis that the ultrasound is reliable and accurate in measuring uterine size

Ultrasound scanning is a good diagnostic tool in obs and gyn disorders and measurement

By Ultrasound can measure the length, width and thickness of the uterus

By using Ultrasound measurement we found the length of the uterus increase by increase number of parity and also affected by the weight of women

Ultrasound scanning is not accurate hundred percent in measuring uterine size but it is very perfectible it can give the change of the size of the uterus it is simple ,cheep, safe and available

5.3 Recommendations

- 1.** Study recommended that the Government should introduce the modern ultrasound machines and increase the training institutes of ultrasound and computer programs for increasing the sinologists skills and experiences.
- 2.** Government should be increasing the specialist hospitals for obs and gyn diseases because they increased in Sudanese now days.
- 3.** According to the high cost of scientific research which the researcher was faced, the government should appeal universities in Sudan and companies to support the researchers in order to improve plans of treating and management of such diseases.
- 4.** Further studies should be carried out in this field on many aspects such as increasing the number of patients, to show the relation between size of the uterus and parity, comparing between the role of U/S scanning and other diagnostic tools, using color Doppler ultrasonography and texture analysis

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Appendices

