WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 14, Issue 13, 995-1035. Research Article ISSN 2277–7105

PREGNANT WOMEN'S KNOWLEDGE, ATTITUDE, AND ASSOCIATED FACTORS TOWARD OBSTETRIC ULTRASOUND IN HOSPITAL ERODE

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Article Received on
05 May 2025,

Revised on 25 May 2025,
Accepted on 14 June 2025,

DOI: 10.20959/wjpr202513-37305

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ABSTRACT

Background: Obstetric ultrasound is a harmless, cheap, and noninvasive imaging modality that helps to scan a pregnant mother and delivers parents with a real-time image of the fetus. As the number of pregnancies rises globally, the demand for obstetric ultrasound becomes even more pressing. **Objectives:** To assess pregnant women's knowledge, attitude, and associated factors toward obstetric ultrasound in hospital, Erode. **Methods:** The study includes 200 pregnant women's admit in hospital erode with an age group above 21, is an cross sectional observational study. **Result:** In this study, only 200 of the respondents had good knowledge on obstetrical ultrasound. Residence, educational status, and parity were significantly associated with knowledge of pregnant women on obstetrical ultrasound. Majority of the participants in this study had a positive attitude toward obstetrical ultrasound. Exposure to obstetrical ultrasound, knowledge on obstetrical ultrasound, and educational status were significantly associated with attitude of pregnant women to obstetrical ultrasound. **Conclusion:** Majority of pregnant women had a positive attitude toward the use of obstetric ultrasound. Whereas Pregnant women's attitudes toward obstetric ultrasound are significantly associated to their educational status, knowledge of obstetric ultrasound, and current exposure to obstetric ultrasound.

INTRODUCTION

Obstetric ultrasound is a harmless, cheap, and noninvasive imaging modality that helps to scan a pregnant mother's abdominal and pelvic cavity with high-frequency sound waves and delivers parents with a real-time image of the fetus.[1,2]

The use of ultrasound in obstetrics is critical because it allows us to explore and detect various disorders even in the early stages of pregnancy, improve the quality of antenatal care (ANC) and pregnancy outcomes and treatment of disease in the current era of evidence-based medicine and as the number of pregnancies rises globally, the demand for obstetric ultrasound becomes even more pressing.

World Health Organization (WHO) 2 recommends that all pregnant women have one ultrasound scan before 24 weeks of pregnancy to estimate gestational age (GA), assess placental placement, determine single or multiple pregnancies, increase fetal abnormality detection, and improve pregnancy outcomes in addition to ultrasound scans when indicated. Furthermore it can improve the accuracy and precision of GA measurement, making it easier to treat suspected preterm delivery and post-term pregnancies, particularly in low-income settings.

Pregnant women in developing countries are more likely to have complications during pregnancy and die, and their newborns are more likely to have complications during birth or shortly after delivery; however, many of the problems may be avoided with adequate prenatal care involving ultrasound scan, which is one of the most significant components of prenatal care.

It has been demonstrated that women's understanding and attitude about antenatal ultrasonography are critical, and that it has an impact on their mental health. This is especially true in cases where ultrasonography is being used newly. Despite this, several studies show that women have little awareness of prenatal sonography and have unreasonable expectations and demands.

Knowledge, attitudes and factors related to obstetric ultrasound among women in Africa, particularly in SSA, have not been fully addressed. In addition to this, previous researches were largely relied on a single-center strategy. This study, on the contrary, took advantage of

multicenter research by allowing individuals from various contexts, including women from rural communities, to participate.

Since the level of knowledge and status of attitude of women about prenatal procedures affects their decision to undergo an obstetric ultrasound test, and the limited understanding of some women may result in rejection of prenatal screening and diagnoses, assessing their knowledge and attitude toward obstetric ultrasound is vital. 22 There were no studies conducted related to pregnant women's knowledge and attitude toward obstetric ultrasound in Ethiopia. Therefore, this study aimed to assess pregnant women's knowledge, attitude, and associated factors toward obstetric ultrasound in public hospitals in Erode.

Development of begins on the day of fertilization, when one sperm penetrates the ovum and unites with it to form one cell. this combining of the ovum and the sperm causes massive division based on a 28 day cycle, gestational date is calculated from the first day of a woman's last menstrual period. About 280 days, or 40 weeks whole pregnancy exist. The formation of organ system occurs between the fertilization and birth, the prenatal period. The first 8 weeks of human development is called the period of embryogenesis sometimes called the period of organogenesis. During pregnancy the level of growth factor such as insulin like growth factor 1 and 2, epidermal growth factor, PDGF etc. are increased in maternal circulation have important role in promoting the growth of developing fetus.

MONTH WISE GROWTH AND DEVELOPMENT OF FETUS FIRST MONTH

Day 1: The entering haploid nucleus of the sperm fuses with the haploid nucleus of the ovum to form diploid nucleus of zygote. Replication of male and female DNA takes place during this stage. The chromosomes get aligned in preparation of the first cell division.

Day 2: The 2 sets of chromosomes migrate to the opposite direction of the zygote, a crease begins to form along the equator marking the line of division. After 24-30 hours of fertilization the zygote or single celled embryo completes the first cell division. The process of repeated cell division is called as cleavage.

Day 3: The zygote starts moving towards the uterus. While it is still in the uterine tube, it under goes cell division to form morula, which is an embryo containing 12-16 cells configured as a solid ball of cells. The inner cells of the morula constitute the inner cell mass

while the surrounding cells compose the outer cell mass. Further the inner cell mass gets differentiated into the embryo while the outer cell mass forms the trophoblast.

Day 4: The uterine tube relaxes under the influence of progesterone and the embryo completes its journey through the uterine tube and enters the uterus.

Day 5: By this time embryo begins to develop a fluid-filled cavity with a collection of cells at one end and is called a blastocyst. The surface of the blastocyst adjacent to the inner cell mass is referred to as the polar end or embryonic pole of the blastocyst. The zona pellucida having delivered the embryo through the maze of the uterine tube, degenerates shortly after the embryo arrives in the uterus. Embryo outside the uterus in a process sometimes called "hatching". The now-free blastocyst is now ready to find a permanent home inside the wall of the uterus.

Day 6: The early embryo gets embedded into the inner wall of the mother's uterus. it occurs after 6 days of fertilization and is completed by 12 days. This step is the attachment stage.

Day 7: The outer cells (trophoblast cells) of the blastocyst bind to the epithelial cells of the endometrium. Once attached. The trophoblast cells release enzymes that digest, liquify, and separate maternal cells forming an entry way inside the uterine wall. Trophoblast cells provide nutrients to the developing embryo. The inner cell mass consist of stem cells that will develop into all the cells of the body.

Week 1: as discussed above.

Week 2: during the second week after fertilization, the developing chorion forms branched extensions, the chorionic frondosum (fetal placenta) that protrude into the endometrium. The surrounding endometrial tissue to undergo changes and become the decidua basalis (maternal placenta). together, the chorionic frondosum and decidua basalis form a single functioning unit, the placenta. Within the placenta, the mother's blood and the blood of the embryo, and carbon dioxide can diffuse in the opposite direction. In addition to exchanging gases, the placenta provides nourishment for the embryo, detoxifies certain molecules that may pass into the embryonic circulation, and secrete hormones.

Week 3: The most characteristic event occurring during the third week of gestation is gastrulation, the process that establishes all three germ layer (ectoderm, mesoderm and endoderm). In third week the neural folds fuse and form the neural tube, a process known as

neurulation. Thickening of the ectoderm leads to the development of the neural plate, this stage is marked by the formation of the neural tube along the dorsal axis of the embryo, as well as by the appearance of the first somites, which give rise to the muscles, vertebrae, and connective tissues. At this point, the embryo is about 2 millimeters long.

Week 4: Organogenesis (the formation of body organs) begins during the fourth week. The eyes form. The tubular heart develops into four chambers and starts to pulse rhythmically, as it will for the rest of individual's life. Over 30 pairs of somites are visible by the end of the fourth week, the arm and leg buds have begun to form. The embryo has increased in length about 5 millimeters.

SECOND MONTH

During the second month of the gestation period the formation of shape i.e. morphogenesis takes place. The miniature limbs of the embryo starts assuming their adult shape. The arms, legs, knees, elbows, fingers and toes can all be seen as well as a short bony tail. The bones of the embryonic tail fuses to form the coccyx. The growth of liver, pancreas and gall bladder becomes clear in the abdominal cavity. By the end of second month of the second month, the embryo grows to about 25 millimeters in length, weighs around one gram and begins to look distinctively like human. Around the eight to ninth week of development the secondary palate begins to develop, cleft palates occur once in 2500 births and are more common in females, on embryological level, a cleft palate occurs because there has been insufficient fusion of the palatine processes or formation of the nasal septum. There are also specific environmental factors that may contribute, including infectious agents, x-ray radiation, drugs, hormones, and nutritional deficiencies.

Figure 1: 2nd month growth.

THIRD MONTH

During this period the embryo reaches the transient point. It is now called as fetus, a Latin word meaning young one or offspring. The nervous system and sense organs develop during the third month and the arms and legs start to move. The embryo begins to show facial expressions and carries out primitive reflexes such as the startle reflex and sucking. Eyelids are formed and fuse together. Fingernails are developing. Between 10 to 12 weeks, the fetus begins small, random movements that are too slight to be felt by the mother. The fetal heartbeat can be detected electronically. All major body organs are formed although they are not able to function outside the uterus. the rest of the pregnancy is needed to allow these organs to grow and mature. Exposure to teratogenic drugs during this period is not associated with major congenital malformations but they may alter the growth and function of normally formed organs and tissues. Between 60-90 days, the differentiation of external genitalia and central nervous system is continued hence their anamolies can be produced by exposure of a teratogen. During this period, the CNS is very sensitive to teratogens, which can cause minor morphological abnormalities (neural migration) or physiological defects.

FOURTH MONTH

Epidermis begins to grow into the dermis thus forming columns of cells, hair follicles, sweat glands, and sebaceous glands develop from the columns. The fetus is able to swallow and the kidneys are able to make urine. Blood begins to form in the bone marrow. The fetus now sleeps and awakens. It has movements of arms, legs, head and neck. The mouth of the fetus is able to open and close. The arms are in proportion to the body. By this age it is possible to distinguish the sex of the fetus. The fetus is about 5-6 inches long and weighs about 3-4 ounces.

Figure 2: Fetus on 4th month.

FIFTH MONTH

During the fifth month, on the head and body a covering of fine hair grows. This hair is called lanugo, the body and facial features of the fetus are now recognizable. The nose, lips and ears can be recognized by this stage. The fetus has grown to about 175 millimeters in length and attained a weight of 225 grams. By the end of the fifth month, the rapid heart beat of the fetus can be heard with a stethoscope, although it can also be detected as early as 10 weeks with a fetal monitor.

Figure 3: Development of fetus from 8 week to 40 week.

SIXTH MONTH

Figure 4: Fetus on 6th month.

By 22 weeks the lower limbs are fully formed. Head and body hair called lanugo thickly covers the fetus. The fetus begins to gain weight steadily but still appears “scrawny”. The skin is typically wrinkled and red. The head is still quite large compared to the rest of the body. Eyebrows and eyelashes are recognizable. By the end of that month, the body weighs 600 grams and is over 300 millimeters long.

THIRD TRIMESTER

The third trimester is predominantly the period of growth rather than development =. The weight of the fetus doubles several times, but this increase in bulk is not the only kind of growth that occurs. Most of the major nerve tracts in the brain, as well as many new neurons, are formed during this period. The thin, wrinkled skin of the fetus is covered with a white cheese like substance called vernix caseosa that protects the skin from the drying action of the amniotic fluid. The lungs of the fetus become more mature with each week that is spent in the uterus. The movements and kicks of the fetus are much stronger now. Sometimes this activity can be seen by watching the mother's abdomen. Lanugo disappears from the face but remains on the head. Muscle tone is developed and the fetus can turn and lift its head. The pregnancy is considered full term and the baby is ready to be born anytime between 38 and 42 weeks.

Figure 5: complete development fetus.

Pregnancy is a unique clinical situation where drug treatment presents a special concern because all the drugs taken by the female have a potential to produce harmful effects in the growing fetus. First trimester of pregnancy is most susceptible to drugs. Nearly 3.3 million children under five years of age die globally every year due to birth defects. An estimate of 3.2 million of those who survive may have lifelong mental, physical, auditory or visual disability. Another surveliance in Mumbai find that out of 17,653 consecutive births, 294 has a major malformation and 1400 had minor malformation. About 8% of pregnant women need permanent drug treatment due to their chronic diseases such as epilepsy, diabetes mellitus, bronchial asthma, hypertension, thyroid disorders, migraine and severe depression.

The word **teratogen** originates from the Greek word for monster, teratos.

Teratogenesis refers to the production of defects in the fetus. A teratogenic agent is responsible for producing such a defect and **teratogens** are substances that may produce physical or functional defects in the human embryo or fetus after the pregnant woman is exposed to the substance they tend to harm the prenatal brain, affecting the future child's intellectual and emotional functioning.

Teratology is the study of anomalous fetal development. the category of teratogenic exposures during pregnancy include drug and chemical agents, infectious agents, physical agents (ionizing radiation, mechanical factors, and heat), and maternal or metabolic factors such as diabetes and phenylketonuria. Physiological changes in mother like change in maternal serum glucose, electrolytes or acid base balance, deficiency of critical substances like folic acid can have a profound effect on the fetus causing serious problems.

Any drug or chemical given to the mother will cross the placenta to some extent unless it is destroyed or altered during placenta to some extend unless it is destroyed or altered during placental passage or its molecular weights greater than 1,000 do not easily cross the placenta into the embryonic-fetal bloodstream to exert potential teratogenic effect. Fetal anatomical anomalies may represent malformations or disruptions with obvious physical changes are identifies, but functional or behavioural changes in the fetus, newborn, or child will be more difficult to link to the teratogenic risks. Teratogenicity occurs when the teratogen is present in an appropriate dosage at a very precise moments during the organogenesis of the embryo having genetic susceptibility. Teratogenicity follows a dose effect relationship. All chemicals when taken in extremely large doses can affect the fetus adversely.

Many times the pregnant females may consult physicians for simple complaints. Hence it is mandatory for physicians to be aware of drug use in pregnancy and lactation. Therefore five categories of maternal benefit to fetal risk with respect to drug exposures have been developed by the USFDA. 9A, B, C, D, X). according to this system category A drugs are the safest drugs to be used in pregnancy, and any fetal risks in unlikely in category B. there is no appropriate data for drugs in category C. category D include those agents which even though have evidence of human fetal risk, but they have to be given to mother in a life-threatening situation. Finally drugs with classification x are absolutely contraindicated in pregnancy.

Obstetrical Ultrasound Imaging

Ultrasound imaging is a noninvasive medical test that helps physicians diagnose and treat medical conditions. It is safe and painless. It produces pictures of the inside of the body using sound waves. Ultrasound imaging is also called sonography. It uses a small probe called a transducer and gel placed directly on the skin. High-frequency sound waves travel from the probe through the gel into the body. The probe collects the sounds that bounce back. A computer uses those sound waves to create an image. Ultrasound exams do not use radiation (x-rays). Because ultrasound captures images in real-time, it can show the structure and movement of the body's internal organs. The images can also show blood flowing through blood vessels. Obstetrical ultrasound provides pictures of an embryo or fetus within a woman's uterus, as well as the mother's uterus and ovaries.

obstetrical ultrasound examination.

Doppler ultrasound is a special ultrasound technique that evaluates movement of materials in the body. It allows the doctor to see and evaluate blood flow through arteries and veins in the body. During an obstetrical ultrasound the examiner may evaluate blood flow in the umbilical cord or may, in some cases, assess blood flow in the fetus or placenta.

Procedure

Obstetrical ultrasound is a useful clinical test to

- Establish the presence of a living embryo/fetus
- Estimate the age of the pregnancy
- Diagnose congenital abnormalities of the fetus
- Evaluate the position of the fetus
- Evaluate the position of the placenta
- Determine if there are multiple pregnancies
- Determine the amount of amniotic fluid around the baby
- Check for opening or shortening of the cervix
- Assess fetal growth
- Assess fetal well-being

Procedure work

Ultrasound imaging uses the same principles as the sonar that bats, ships, and fishermen use. When a sound wave strikes an object, it bounces back or echoes. By measuring these echo

waves, it is possible to determine how far away the object is as well as its size, shape, and consistency. This includes whether the object is solid or filled with fluid.

Doctors use ultrasound to detect changes in the appearance of organs, tissues, and vessels and to detect abnormal masses, such as tumors.

In an ultrasound exam, a **transducer** both sends the sound waves and records the echoing (returning) waves. When the transducer is pressed against the skin, it sends small pulses of inaudible, high-frequency sound waves into the body. As the sound waves bounce off internal organs, fluids and tissues, the sensitive receiver in the transducer records tiny changes in the sound's pitch and direction. A computer instantly measures these signature waves and displays them as real-time pictures on a monitor. The technologist typically captures one or more frames of the moving pictures as still images. They may also save short video loops of the images.

The movement of the embryo or fetus and his or her heartbeat can be seen as an ongoing ultrasound video. Ultrasound devices also use Doppler, a special application of ultrasound, which processes echoes produced by blood flowing through the fetal heart, blood vessels and umbilical cord and turns them into audible sound. The sound has been described by patients as a whooshing noise.

Doppler ultrasound, a special ultrasound technique, measures the direction and speed of blood cells as they move through vessels. The movement of blood cells causes a change in pitch of the reflected sound waves (called the Doppler effect). A computer collects and processes the sounds and creates graphs or color pictures that represent the flow of blood through the blood vessels.

procedure performed

For most ultrasound exams, you will lie face-up on an exam table that can be tilted or moved. Patients may turn to either side to improve the quality of the images.

The radiologist (a doctor specifically trained to supervise and interpret radiology exams) or sonographer will position you on the exam table. They will apply a water-based gel to the area of the body under examination. The gel will help the transducer make secure contact with the body. It also eliminates air pockets between the transducer and the skin that can block the sound waves from passing into your body. The sonographer places the transducer

on the body and moves it back and forth over the area of interest until it captures the desired images.

There is usually no discomfort from pressure as they press the transducer against the area being examined. However, if the area is tender, you may feel pressure or minor pain from the transducer.

Once the imaging is complete, the technologist will wipe off the clear ultrasound gel from your skin. Any portions that remain will dry quickly. The ultrasound gel does not usually stain or discolor clothing.

Sometimes the radiologist determines that a transvaginal scan needs to be performed. This technique often provides improved, more detailed images of the uterus and ovaries. This method of scanning is especially useful in early pregnancy.

Doctors perform transvaginal ultrasound very much like a gynecologic exam. The doctor will insert the transducer into the vagina after you empty your bladder. The tip of the transducer is smaller than the standard speculum that a Pap test uses. The doctor places a protective cover over the transducer, lubricates it with a small amount of gel, and inserts about two to three inches of the transducer into the vagina. The doctor obtains images from different angles to get the best views of the uterus and ovaries. During transvaginal ultrasound, you will usually lie on your back, possibly with your feet in stirrups similar to a gynecologic exam.

Doctors perform Doppler sonography with the same transducer.
Most ultrasound exams are painless, fast, and easily tolerated.

However, at times during an obstetrical ultrasound, the sonographer may have to press more firmly to get closer to the embryo or fetus to better visualize the structures. Any discomfort is usually minimal and temporary.

If the doctor performs a Doppler ultrasound exam, you may hear pulse-like sounds that change in pitch as they monitor and measure the blood flow.

With transvaginal scanning, there may be minimal discomfort as the transducer is inserted into the vagina. This ultrasound examination is usually completed within 30 minutes. When the exam is complete, the technologist may ask you to dress and wait while they review the

ultrasound images. After an ultrasound exam, you should be able to resume your normal activities immediately.

A radiologist, a doctor trained to supervise and interpret radiology exams, will analyze the images. The radiologist will send a signed report to the doctor who requested the exam. Your doctor will then share the results with you. In some cases, the radiologist may discuss results with you after the exam.

You may need a follow-up exam. If so, your doctor will explain why. Sometimes a follow-up exam further evaluates a potential issue with more views or a special imaging technique. It may also see if there has been any change in an issue over time. Follow-up exams are often the best way to see if treatment is working or if a problem needs attention.

Benefits vs. Risks

Benefits

- Most ultrasound scanning is noninvasive (no needles or injections).
- Occasionally, an ultrasound exam may be temporarily uncomfortable, but it should not be painful.
- Ultrasound is widely available, easy to use, and less expensive than most other imaging methods.
- Ultrasound imaging is extremely safe and does not use radiation.
- Ultrasound scanning gives a clear picture of soft tissues that do not show up well on x-ray images.
- Ultrasound is the preferred imaging modality for the diagnosis and monitoring of pregnant women and their unborn babies.
- Ultrasound has been used to evaluate pregnancy for nearly four decades and there has been no evidence of harm to the patient, embryo or fetus. Nevertheless, ultrasound should be performed only when medically indicated.
- Ultrasound allows the doctor to see inside the uterus and provides much information about the pregnancy.

Risks

Standard diagnostic ultrasound has no known harmful effects on humans

Obstetric ultrasound cannot identify all fetal abnormalities. Consequently, when there are clinical or laboratory suspicions for a possible abnormality, a pregnant woman may have to

undergo nonradiologic testing such as a blood test or amniocentesis (the evaluation of fluid taken from the sac surrounding the fetus) or chorionic villus sampling (evaluation of placental tissue) to determine the health of the fetus, or she may be referred by her primary care provider to a perinatologist (an obstetrician specializing in high-risk pregnancies).

LITERATURE REVIEW

1. **Saputri et al., 2023,** From the results of the study, it is revealed that there is no meaningful relationship between the family income of pregnant women and the nutritional intake of vitamin A in pregnant women (p value = 0.231). The results showed that respondents who had sufficient. income were not always followed by sufficient protein nutritional intake, which proven by 9 respondents who turned out to be with sufficient income turned out to be as many as 1 person (11.1%) had a lack of vitamin A nutritional intake.

2. **Kasmiati, et al. 2022.** The results showed that there were 45 (93.8%) people who had good nutritional status while 3 (95.3%) people had sufficient knowledge. Less knowledge of 11 (40.7%) people who had a moderately poor good nutritional status 16 (59.3%) people. Meanwhile, the economic status is less than 15 (46.9%) people who have good nutritional status while bad 17 (53.1) people. Thus, there is a relationship between knowledge, economic status and nutritional status of pregnant women with a value of p = 0.001.

3. **Thomas et al 2022,** The results obtained that the nutritional needs of pregnant women during the pandemic should be improved more than normal conditions because the mother must take good care of the state of body immune.

4. **Mulyati, 2021,** The results of the study showed that as many as 23 respondents (62.2%) the nutritional status of pregnant women was good, as many as 24 respondents (64.9%) had a non-risky age, many 22 respondents (59.5%) had eating habits not good, as many as 20 respondents (54.1%) have poor knowledge about the nutritional status of pregnant women, there is a relationship between age and nutritional status in pregnant women in Workplace of Olak health center of Kemang Jambi City. There is a relationship between eating. habits and nutritional status in pregnant women in the Olak Kemang Health Center Workplace, Jambi City. There is a relationship between knowledge and nutritional status in pregnant women. Thus, it is hoped that health workers can provide information and

counseling about nutritional status in pregnant women and create a program such as cooking demos, nutritional monitoring of pregnant women who are in their work area.

5. **Umar et al 2021.** The findings shows that energy intake, protein intake, socioeconomic status, as well as the level of knowledge do not have a significant impact on the nutritional status of pregnant women (p=0.000). It is recommended that pregnant women continue to maintain and meet the daily nutritional intake.

6. **Rahman et al 2020** It was postulated that the nutritional situation in Southwest of Bangladesh's region has not improved satisfactorily as an educational environment and requires more attention and community-based strategies for improving the nutritional status of mothers. This study is useful in understanding the severity of the nutritional status of pregnant women and increasing awareness of pregnant women in achieving their physical, mental and academic achievement.

7. **Andhika et al 2019,** Indicates that knowledge (P = 0.015, OR = 4.608), attitude (P = 0.008, OR = 7.933), family support (P = 0.035, OR = 3.857), family income level (p = 0.598, OR = 1.593). Multivariate analysis showed the most dominant variable associated with the nutritional status of pregnant women was attitude (OR = 8,576). Therefore, there is a connection between family knowledge, attitudes, and support and the nutritional status of pregnant women. Meanwhile, the level of family income is not related to the nutritional status of pregnant women. Attitude variables are the dominant risk factor for SEZ.

8. **Zaitun et al 2018**, There is an influence of predisposing factors (knowledge, diet), on the nutrition of pregnant women in the work area of the Sakti Health Center, Sakti District, Pidie Regency in 2020.

9. **Nagrahani et al 2017,** Based on the results of the analysis obtained, there is a significant relationship between knowledge and motivation (p = 0.039). There is a significant association between anxiety and motivation (p=0.004). There is a relationship between knowledge and anxiety and motivation (p=0.004). Pregnant women in Indonesia have good knowledge about COVID-19, the knowledge they have can reduce the level of worry and still have the motivation to come to health workers to monitor pregnancy.

10. **Wilson et al 2015,** The majority of participants in this activity responded positively to the question of understanding the nutritional. requirements of pregnant women during the Covid-19 pandemic, which is encouraging.

11. **Bobari et al 2014,** Of the 20 participants for the pretest questions, the results obtained were 65% of the total correct answers answered by the participants. As for the posttest, 94% results were obtained. Judging from the increase in posttest results, it can be seen that mothers get some knowledge related to pregnant women during the Covid-19 pandemic, because of the increase from 65% to 94%. Conclusions from counseling activities about the importance of nutrition in pregnant women during the COVID-19 pandemic have a positive impact on the community, so that the community.

12. **Shamnas M, Arya PS, Viji A Thottumkal and MG Deepak, 2013**, conducted a surveillance study in which their aim was to find the overall frequency of congenital anomalies in India. In this study they found that India has the highest number of children with birth defects. 8-15% of prenatal deaths and 13-16% of neonatal deaths in India are due to congenital anomalies. Of which neural tube defects, down syndrome, thalassemia, congenital heart defects and muscle dystrophy are the most common birth defects. Among 100 children 2-3 of them are born with birth defects around the world, 2.5/1000 are born with neural tube defects, 2.7/1000 with gastrointestinal abnormalities and 1.9/1000 with congenital heart defects. Conditions like inadequate intake of folic acid, iodine deficiency, lesser knowledge among pregnant women and lack of interest among the health care professional to educate the pregnant women to take vaccination against rubella, pregnancy after 35 years of age, consanguineous marriage, alcohol consumption, use of teratogenic medications and oral contraceptives were that most common reason that caused birth defect in children. They concluded that educating the public about congenital anomalies, optimizing women's diet during pregnancy and vaccination against rubella are some of the measures which could be taken to reduce the risk of birth defects among new born babies.

13. **Lewis. B. Holmes et al. 2010,** at five different maternity hospital in Boston area. The aim of this study was to find whether the major symptoms of anticonvulsant embryopathy such as growth retardation, hypoplasia of the midface and fingers were due to maternal epilepsy itself or due to the exposure to anticonvulsant drugs because the medical textbooks suggested that these defects could be due to other factors like genetic

abnormalities that caused epilepsy in mother and could have been inherited by the fetus therefore for this reason this study was conducted. During this study they screened around 128,049 pregnant women and their infants were classified into three groups (1) those exposed to anticonvulsant drugs (2) those pregnant women who had history of epilepsy but were not exposed to anticonvulsant drugs (3) those with no history of epilepsy. Potential subjects were selected and their demographic data was collected and various questions were asked like reason for taking the anticonvulsant drug, the dosage, type of seizure, frequency of seizure during pregnancy and whether they lost consciousness during the seizers with family history were collected. These questions and diagnostic test reports were reviewed by the study physicians. Based upon the protocol the infants after birth were examined and various physical/body features like the dermal ridge pattern on fingers, bitemporal width and circumference of head, the length of lips and nose and the inner canthal distances were measured. Out of the 128,049 women screened 509 women of them belonged to the group A which were exposed to antiepileptic agents of which 386 used single agent while 123w of them used two or more drugs. 606 of them belonged to the group B which had history of epilepsy but weren't exposed to anti epileptic agents during pregnancy. 1186 belong to group C i.e. the control group which didn't have any medical history of epilepsy nor they were exposed to any antiepileptic agents. They found that there was no significant difference between the group C i.e. the control group and the group B. the infants of group whose mother's were exposed to one or multiple antiepileptic agents had higher frequency of anticonvulsant embryopathy features than the infants of the mother's who had history of epilepsy but were not exposed to antiepileptic drugs (or) the infants whose mother didn't have any history of epilepsy. It was also found that mother's who were given valproic acid as anti epileptic agent their infants had lower verbal IQ. Therefore it can be concluded that anticonvulsant embryopathy symptoms in infants are due to exposure to antiepileptic drugs, monotherapy is safer than multiple drug therapy and valproate causes lower verbal IQ in infants.

14. **Luciacea Soriano et al. 2009,** he conducted the study at brigham and women's hospital department of anesthesia, critical car eand pain medicine at united state. the study about the management of hypertensive medication in pregnancy at united kingdom. He used electronic medical records form the health improvement network (THIN) database from 1996-2010 to identify completed pregnancies. the cohort study included the first pregnancy identified during the study period in women aged 13-49. he identified women

of childbearing age (13-49) From 1996 to December 2010 and also eligible women only after they had been registered with their PCP for at least one year. In this cohort of 148, 544 completed pregnancis, 1995(1.3%) women had been a recorded diagnosis of hypertension before their LMP data compared with women without hypertension, women with pre-existing hypertension were likely to be obese (33% vs 10%, p<0.001), have diabetes (4.5% vs 0.5% p<0.001), hyperlipidemia (3.6% vs 0.4% p<0.001) and hypothyroidism (2.7% vs 1.6% p<0.001). he noted the most commonly prescribed doses was beta blockers, both during pregnancy (0.8%) and during first trimester (0.5%). prescription of antihypertensive medications during the first trimester of pregnancy increased between 1996and 2010, from 0.8% to 1.37% between 1996 to 2010. an increase was seen for all antihypertensive classes expect for diuretics (0.23%to from 0.18% from 1996 to 2010. he give conclusion ,women with pre-existing hypertension tend to continue on antihypertensive agent during pregnancy.

15. **Krista f hybrechtsm, sphd's Kristin palmsten, 2008**, the study was conducted at department of medicine, nrrigham and women's hospital in united states. he study about the antidepressant use in pregnancy and risk of cardiac defects. he performed a cohort study noted in 2001-2007 medical analytic extract. the study included 949, 504 pregnant women enrolled in medical from three months before conception through one month of post delivery and their live births infants. they compared the risk of major cardiac defect in women with antidepressant medication using trimester versus no use restrictive the cohort to women with depression and using propensity score adjustment to control for depression severity and their potential confounder's. he find result 64,389 women (68%) women used antidepressant during first trimester, overall 6,403 infants not exposed to antidepressant were born with a cardiac defect (72.3 % per 10,000), compared with 580 infants exposed (90.1% per 10,000). Association between antidepressant use and cardiac defect were attenuated with increasing level of adjustment for confounding. for SSRI'S, relative risks for any cardiac defect were 1.25(95% unadjusted, 1.12 depression restricted and 1.06 depression restricted and fully adjusted. He given conclusion of his result large population cohort study suggest no substantial increased risk of cardiac malformation attributes to SSRI'S this study help to identify the first trimester antidepressant does not substantively increase the risk of specific cardiac defect. The accumulated evidence implies low absolute risk and argue against the existence of important cardiac teratogenic effect for the most commonly used depressant medication.

16. **Tanja gram petersenetal, 2006**, he conducted study about "use of paracetamol ibuprofen or aspirin in pregnancy and risk of cerebral palsy in the child" department of epidemiology university of California. The study included 1, 85, 617 mother child pairs from the Danish national birth cohort and norwegian mother and child cohort study. They created harmonised definitions of analgesic use in pregnancy, as well as indication for analgesic use and other potential confounders. Children with cp were identified in nation wide registers. They estimated the average casual effect of analgesics on risk of cp using marginal structural models with stabilized inverse probability weight. Finally we found that paracetamol use reported in 49% of all pregnancies, aspirin in 3% and ibuprofen in 4% prenatal exposure to paracetamol in pregnancy was associated with risk of overall cp. they observed on increased risk of spastic cp in children prenatally exposed to paracetamol and aspirin no elevated risk of cp was found with exposure to ibuprofen after adjustment.

17. **Bjornpasternak, MD. PhD, 2005**, this article brings up a detailed study about use during early pregnancy. It also reveals the risk of birth defects in early pregnancy. Use of proton pump inhibitors in early pregnancy and the risk of birth defects. They have cunducted a study to access the association between exposure to ppi during pregnancy. It also contains the risk of major birth defects amoung all infants born alive in between January 1996 and September 2008. In this article the author mentioned the collection of data from nation wideresgister, birth defects and the potential con-founders. they have chartered the accurate results based on which of the data they were collected previously. article also show the collection of the data from which they collected including medical birth register, prescription drug register, national patient register, the central person register and statistic Denmark. this study waa approved by the danisg data protection agency. this article picture the clear data of birth defects cases using national patient register. article show the collection of data during different intervals. article figure out the percentage of women reciving Prescription for ppi drug pregnancy. This paper contains information regarding birth year, history of birth defects in siblings, other age at consumption purity. Smoking status, place of birth, place of residence, educational level etc. Articles shows the estimation of statistical analysis using logistics regression. Finally one of the findings of the study was that the omeprazole was the most commomly prescribed ppi. They also followed analysis of individuals ppi including lansoprazole, rabeprazole etc.

18. **Robert et al., 2005,** the U.S. Food and Drug Administration (FDA) classified over-the-counter (OTC) and prescription drugs into 5 categories of safety for use during pregnancy (A, B, C, D, X). However, few well-controlled studies of therapeutic drugs have been done in pregnant women. Most information about drug safety during pregnancy is derived from animal studies, uncontrolled studies, and postmarketing surveillance. Consequently, the FDA classification system led to confusion and difficulty applying available information to clinical decisions. In December 2014, the FDA responded by requiring that the pregnancy categories A, B, C, D, and X be removed from the labeling of all drugs.

19. **Williams et al., (2004)** The information required by the FDA has 3 subsections: Pregnancy: Information relevant to the use of the drug in pregnant women (eg, dosing, fetal risks) and information about whether there is a registry that collects and maintains data on how pregnant women are affected by the drug. Lactation: Information about using the drug while breastfeeding (eg, the amount of drug in breast milk, potential effects on the breastfed child). Females and males of reproductive potential: Information about pregnancy testing, contraception, and infertility as it relates to the drug. The pregnancy and lactation subsections each include 3 subheadings (risk summary, clinical considerations, and data) that provide more detail. The final rule does not apply to nonprescription (over-the-counter) drugs.

20. **Fasalu ROM, Balasubramanian T In August 2003,** the US Food and Drug Administration approved use of a respiratory syncytial virus (RSV) vaccine in pregnant individuals between 32 to 36 weeks of gestation, with a warning to avoid use prior to 32 weeks. Clinical trials have found increased rates of preterm birth, preeclampsia in pregnant patients, and low birth weight and jaundice in infants following prenatal administration of RSV vaccine versus placebo; further study is needed to evaluate these potential risks (3).

21. **Manoj Kumar Saurabh (2002)** studied that Evaluation of Medicine Exposure During Pregnancy at a Tertiary Center of an Indian State. The objectives of the study is to evaluate drugs used in pregnancy. A prospective, cross-sectional, descriptive study was carried out by collecting and evaluating prescriptions on various parameters. Results: More than 50% of antenatal care attendees belonged to the 18-24 age group, and 102 (41.46%) were primigravidae. The main presenting complaints were abdominal pain (25.16%), followed by nausea and vomiting (22.60%) and fever (11.14%); the maximum

number of visits to hospital was seen in the first trimester (40.53%), followed by the third trimester (38.42%). It was observed that 25.78% of prescriptions did not contain any medicine. The average number of prescribed medicines was 2.32, with the lowest in the first trimester (1.77) and the highest in the second trimester (2.78). It was noticed that 74.11% and 71.26% of all prescribed medicines were from essential medicine list and generics, respectively. Of all prescribed drugs, 11.52% were antimicrobials, and 4.11% injectable dosage forms. Vitamins and minerals were the preferred prescribed medicines (34.82%), followed by antimicrobial agents (11.52%) and doxylamine plus pyridoxine (10.16%). Also, doctors who made the drug choice during antenatal visits were more confident in evidence-based safety as per New Pregnancy and Lactation Rule (PPLR); 45.37% of drugs were prescribed from category A, followed by 38.25% from category B and none from group X. The conclusions of the study was doctors were concerned about prescribing safer drugs in pregnancy and were more confident in evidence-based medication.

22. **Mevhibe Tamirci, et al., (2001)** studied that Evaluation of the pregnant women's approaches regarding drug utilization. Drug utilization habits of the pregnant are a critical aspect of rational use of the medicine (RUM). This study aimed to analyze the RUM related attitudes and the behaviors of women during their pregnancies. The data were collected between May 2016–October 2016 by conducting surveys to 71 pregnant women admitted to the private and governmental hospitals in five districts of Northern Cyprus. The sociodemographic characteristics of the pregnant as well as their attitudes and behaviors concerning drug use were evaluated. The mean age and the gestational week of the patients was 29.7±4.3 years and 25.7±11.2 weeks, respectively. Planned pregnancies constituted 71.8% of all. The percentage of patients with an unplanned pregnancies who were using drugs at the time of the survey (25.0%) was lower than that in those with planned pregnancies (49.0%, $p<0.05$). Almost two-thirds (66.2%) of the women were exposed to a drug during pregnancy, mostly for "vitamin/mineral prophylaxis" (38.3%) and agents controlling nausea/vomiting (19.1%). Two out of eleven women (18.2%) were using folic acid when they learned about their pregnancy. One of the drugs used for the chronic disorder in the third trimester was acetylsalicylic acid (11.1%), a category D drug in this setting. Most of the patients stated that they frequently read the instructions (60.9%), "often" paying attention to side effects (56.5%). Considering some of the habits related to drug use, 8.7% and 10.9% of pregnant women declared that they sometimes

"did not follow the instructions" and "dosage/duration of the drug usage", respectively. Seven patients (15.2%) declared that they did not consider side effects on the medication guide while more than half (56.5%) did it "often". Near one in five (19.6%) of the pregnant women stated that they hesitated about the drug usage due to teratogenicity risks. Our study highlights the drug utilization attitudes and behaviors of pregnant women during pregnancy in Northern Cyprus, indicating several shortcomings, including insufficient prenatal folic acid use, occasional use of risky drugs, and unsatisfactory medication guide handling. Available findings underline the necessity of education not only for patients but also for healthcare providers to disseminate RUM in pregnancy.

23. **M K Bakker, J Jentink, (2000)** studied that Drug prescription patterns before, during and after pregnancy for chronic, occasional and pregnancy-related drugs in the Netherlands. To compare the prescription of drugs in women over a period from 2 years before until 3 months after pregnancy, regarding the type of drugs used and the fetal risk. A cohort study based on pharmacy records of women giving birth to a child between 1994 and 2003. The study was performed with data from the InterAction database, containing prescription-drug-dispensing data from community pharmacies. The study population included 5412 women for whom complete pharmacy records were available. Drugs were classified into three categories: (1) drugs for chronic conditions, (2) drugs for occasional use and (3) drugs for pregnancy-related symptoms and also classified according to the Australian classification system. The prescription rate was calculated as the number of women per 100 women who received one or more prescriptions for a given drug within a specified time period. About 79.1% of the women received at least one prescription during pregnancy. The prescription rate for most drugs for chronic diseases and for occasional use decreased during pregnancy, whereas, as expected, the prescription rate for pregnancy-related drugs increased. During the first trimester of pregnancy, 1.7% of all drugs prescribed for chronic conditions and 2.3% of the occasional drugs were classified as harmful. The increase in prescription rate during pregnancy is caused by an increase in prescription rate of drugs for pregnancy-related symptoms. The prescription of harmful drugs is more commonly associated with drugs for occasional use rather than with drugs for chronic conditions. Therefore, a more cautious prescribing of drugs to healthy women in the fertile age is necessary.

24. **Alin Basgül, Ahmet Akici, et al., (2000**) studied that Drug utilization and teratogenicity risk categories during pregnancy. A limited number of studies have investigated in detail the use of drugs during pregnancy. Researchers in the present study investigated the details of drug utilization in pregnant women during the month before pregnancy, at the time that they became aware of the pregnancy, and during the first trimester. Face-to-face interviews were conducted with 359 pregnant women who were admitted to the fetal medicine unit at a university hospital for diagnosis and follow-up. A questionnaire was used to document sociodemographic characteristics and details of drug use. Drugs were categorized according to the US Food and Drug Administration fetal risk classification. Mean maternal age was 29.9+/-5.1 y, and mean gestational age was 19.6+/-9.5 wk. Many of the pregnant women studied (46.6%) were university graduates, and most (61.9%) had a relatively high annual income. Mean gestational age when participants first learned of their pregnancy was 39.8+/-16.4 d. One hundred seventeen participants (32.6%) used drugs during the month before conception, 54 (15%) at the time when they learned of their pregnancy, 180 (50.1%) at the time of the interview, and 289 (80.5%) during the first trimester. The percentages of drugs in categories D and X used by these subjects were 14%, 13.5%, 2.9%, and 5.9%, respectively. Most of the drugs were hormones. The total rate of drug utilization was not high before and during the first trimester of pregnancy. A considerable number of women were using drugs from the D and X categories; however, these numbers decreased significantly when women learned of their pregnancies. Intake of folic acid, vitamins, and iron was very low during the preconception period and was not high enough during the first trimester; this suggests that particular attention should be paid to the use of beneficial "safe" drugs during the preconception and early pregnancy periods.

AIM AND OBJECTIVE

Aim

To assess Pregnant women’s knowledge, attitude, and associated factors toward obstetric ultrasound in hospital erode.

OBJECTIVE

1. Evaluate pregnant women's knowledge attitude and associated factors towards obstetric ultrasound.
2. To create awareness in patient about obstetric ultrasound.

3. Attitude and associated factors towards obstetric ultrasound and survey.

PLAN OF WORK

The entire study was planned for a period of 9 months.

The proposed study was designed in three phases to achieve the objectives.

PHASE I

- Literature review
- Identification of the need of work
- Preparation of protocol
- Obtaining institutional human ethics committee approval

PHASE II

- Designing the data collection form,
- Selection of study subjects
- Collection of data
- Documentation of collected data

PHASE III

- Analysis of collected data.
- Statistical analysis of all collected data.
- Report preparation
- Submission

METHODOLOGY

The study includes 200 pregnant women admit in the multi-speciality hospital erode with an age group of above 21.

Study design: study based on cross sessional observational study.

Study site: the study site is plan to conduct in multi-speciality hospital erode, Tamilnadu.

Study period: study plan conduct for 9 months.

Study size: RAO software, 200patient.

Sample size was calculated by using RAO Software by keeping 7% margin error 90% of confidence interval and 50% response distribution the sample was found to be 200.

Margin error	7 %
Confidence level	90%
Population size	20000
Response distribution	50%

Questionary survey

Source of data: data collection form

Study procedure

- Design of data collection form.
- Collect patient demographic data.
- Questionaries are asked related to pregnant women's knowledge, attitude and associated factors towards obstetric ultrasound in hospitals erode.
- Record all the necessary data along with the patient demographic details and spread knowledge of attitude and associated factors towards obstetric ultrasound.

Inclusion criteria

All pregnant women who were attending ANC and who have been living for at least 9 months in Erode Hospital were included in our study.

Exclusion criteria

Pregnant women who are critically ill and unable to communicate at the time of data collection.

RESULTS

This a cross sessional observational study was conducted in a hospital erode about 9months.

SOCIODEMOGRAPHIC CHARACTERISTIC OF PREGNANT WOMEN

The result of the observation are reported below,

Table 1: Age Distribution.

Age	Number	Percentage %
21-25	110	55%
26-30	50	25%
31-35	30	15%
35-40	10	5%
Total	200	100%

As per the demographic data obtained, out of the total 200 patient 55% were at the age of 21-25 and 25% were belongs to group of 26-30 and 15% were belongs to 31-35 and only 5% were belongs to 35-40.

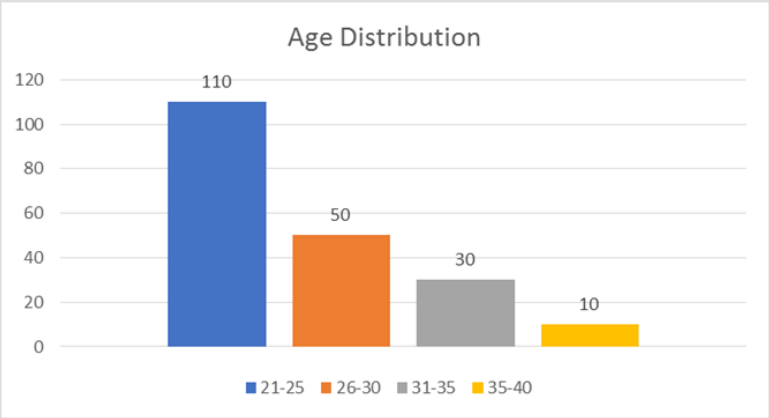

Figure 6: Age Distribution.

Table 2: Religion Based Distribution.

Religion	Number	Percentage %
Hindu	120	60%
Christian	20	10%
Muslim	60	30%
Total	200	100%

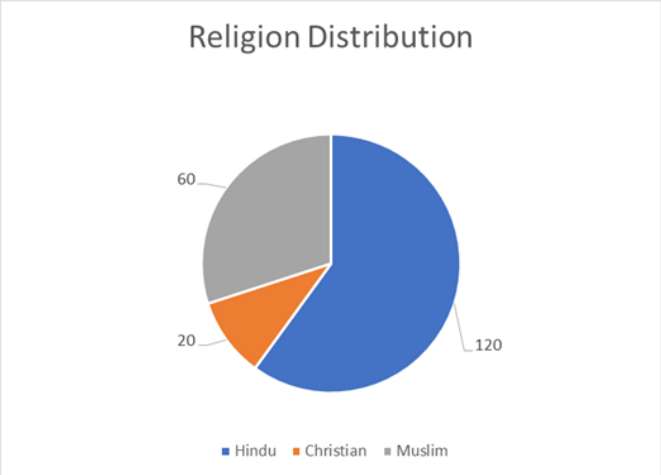

Figure 7: Religion Based Distribution.

As per the data obtained, out of the 200 patient 60% of the patient are belongs to Hindu religion and 10% were belongs to Christian and 30% were belongs to Muslim.

Table 3: Level of Education.

Level of Education	Number	Percentage %
Can not Read and write	50	25%
Primary School	120	60%
Secondary School and Above	30	15%
Total	200	100%

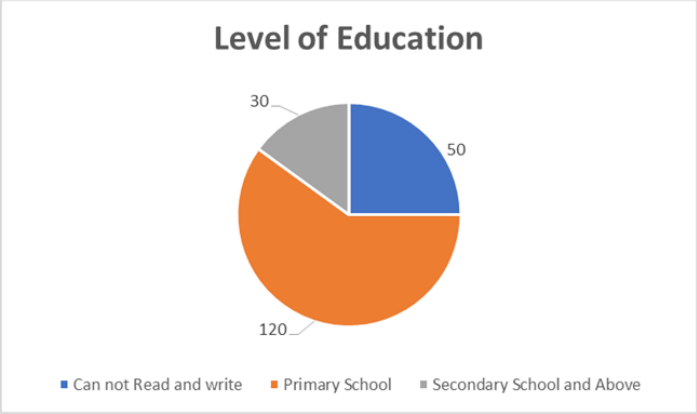

Figure 8: Level of Education.

As per the data obtained out of the 200 patients 60% patients are belong to primary level of education 25% were cannot read and write, and 15% belong to secondary school and above

Table 4: Obstetric And Maternal Health Services Characterstic.

Total number of pregnancy	Number	Percentage %
1-2	130	65%
3-4	40	20%
5-6	30	15%
Total	200	100%

Amough the 200 patient 65% of patient have their 1nd & 2nd pregnancy and 20% were belongs to 3rd & 4th pregnancy and only 5% were belongs to 4th and 5th pregnancy.

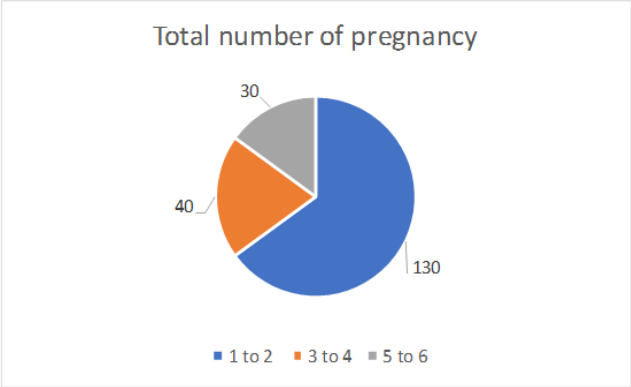

Figure 9: Total number of pregnancy.

Table 5: Previous Pregnancy Place of delivery.

Previous place of delivery	Number	Percentage %
Hospital	170	85%
Health Centre	20	10%
Home	10	5%
Total	200	100%

85% of the patient previous pregnancy place of delivery is hospital. 10% of patient are belongs to healthcenter. 5% were belongs to home delivery.

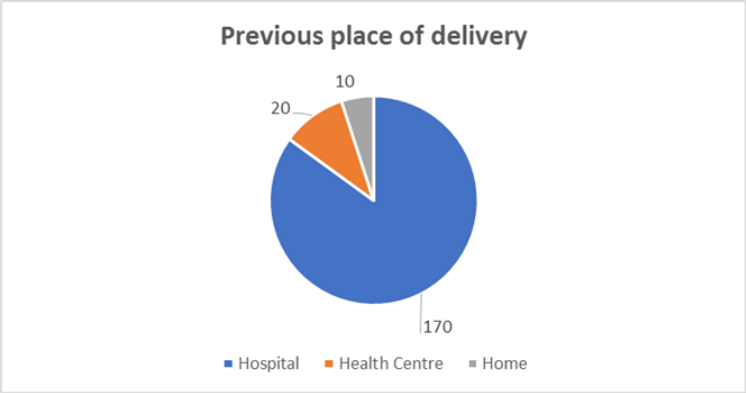

Figure 10: Previous Pregnancy Place Delivery.

Table 6: Bad Obstetrical History.

Having bad Obstetrical history	Number	Percentage
Yes	10	5%
No	190	95%
Total	200	100%

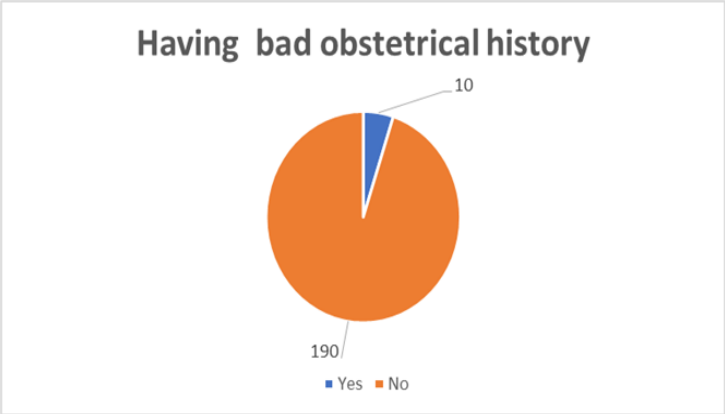

Figure 11: Bad Obstetrical History.

Based on the data collected only 5% of patients have bad obstrical history. 95% of patients dont have any bad obstrical history.

Table 7: Distribution based on TT vaccine coverage.

The data showing that 30% patient not had any TT vaccine. 5%were belongs to taken one TT and 45% were taken two & more TT.

TT Vaccine Coverage	Number	Percentage
None	60	30%
One TT	50	25%
Two and More TT	90	45%
Total	200	100%

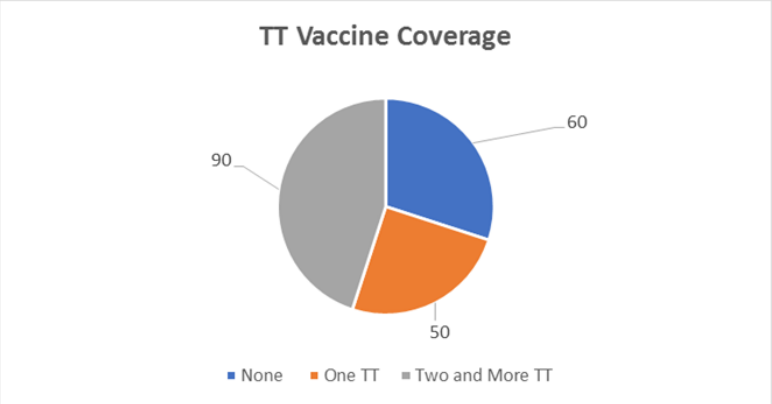

Figure 12: Distribution based on TT vaccine coverage.

KNOWLEDGE COMPONENT ON OBSTETRIC ULTRASOUND OF PREGNANT WOMEN

As per the data obtained, 90% patient know the importance of ultrasound to confirm pregnancy,10% patients were not. 75% of population know the importance of ultrasound to determine sexof the baby. remaining 25% not. 60% patient know the importance of ultrasound to determine the fetal position. 40%patient don't know the importance. the data showing that 45% patient know the importance of ultrasound to determine the cord & placenta position 75% patients know the importance of ultrasound to determine the expected date of delivery. remaining 20% dont have the knowledge.out of the 200 patient 75% know about importance of ultrasound to confirm presence of multiple pregnancy. 60% patient were know the importance of ultrasound to estimate fetal weight. overall data showing that out of 200 patients 90% patient have good knowledge about obstetric ultrasound of pregnant women.

Table 8: Know Importance Of Ultrasound To Conform Pregnancy.

Know Importance Of Ultrasound To Conform Pregnancy	Number	Percentage
Yes	180	90%

No	20	10%
Total	200	100%

Table 9: Know Importance Of Ultrasound To determine sex of baby.

Know Importance Of Ultrasound To determine sex of baby	Number	Percentage
Yes	150	75%
No	50	25%
Total	200	100%

Table 10: Know Importance Of Ultrasound To determine the Fetal Position.

Know Importance Of Ultrasound To determine the Fetal Position	Number	Percentage
Yes	120	60%
No	80	40%
Total	200	100%
Know Importance Of Ultrasound To determine the cord and Placenta position	**Number**	**Percentage**
Yes	90	45%
No	110	55%
Total	200	100%

Table 11: Know Importance Of Ultrasound To determine the Expected date of Delivary.

Know Importance Of Ultrasound To determine the Expected date of Delivary	Number	Percentage
Yes	150	75%
No	50	25%
Total	200	100%

Table 12: Know Importance Of Ultrasound To detect complication of pregnancy.

Know Importance Of Ultrasound To detect complication of pregnancy	Number	Percentage
Yes	170	85%
No	30	15%
Total	200	100%

Table 13: Know Importance Of Ultrasound To conform the presence of multiple pregnancy.

Know Importance Of Ultrasound To conform the presence of multiple pregnancy	Number	Percentage
Yes	150	75%
No	50	25%
Total	200	100%

Table 14: Patient Knowledge.

Patient Knowledge	Number	Percentage
Good Knowledge	180	90%
Poor Knowledge	20	10%
Total	200	100%

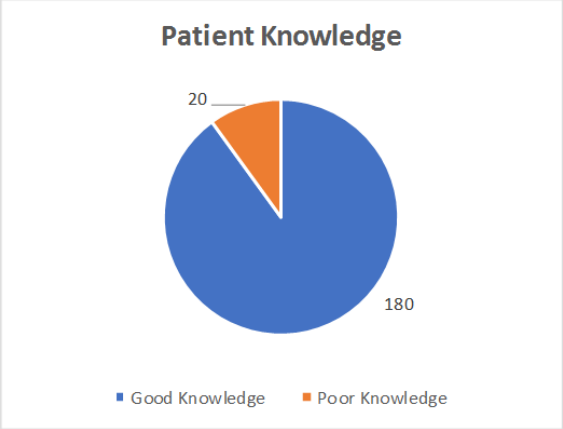

Figure 13: Patient Knowledge.

ATTITUDE OF PREGNANT WOMEN TO OBSTETRIC ULTRASOUND

Attitude of pregnant women to obstetric ultrasound is well examined, 65% patient perceive that obstetric ultrasound is safe for fetus. 95% patient felt comfortable during ultrasound examination. 75% patient believe that prenatal sex determination is more right. 90% patient believe that ultrasound finding is more accurate 75% patient had positive attitude towards obstetric ultrasound and 25% patient have negative attitude.

Table 15: Precive that obstretial ultrasound is safe for mother.

Precive that obstretial ultrasound is safe for mother	Number	Percentage
Yes	130	65%
No	70	35%
Total	200	100%

Table 16: Precive that obstretial ultrasound is safe for Fetus.

Precive that obstretial ultrasound is safe for Fetus	Number	Percentage
Yes	180	90%
No	20	10%
Total	200	100%

Table 17: Felt comfortable during ultrasound Examination.

Felt comfortable during ultrasound Examination	Number	Percentage
Yes	190	95%
No	10	5%
Total	200	100%

Table 18: Belive that pre natal sex determination is right.

Belive that pre natal sex determination is right	Number	Percentage
Yes	150	75%
No	50	25%
Total	200	100%

Table 19: Pregnant women attitude towords obstretial ultrasound.

Pregnant women attitude towords obstretial ultrasound	Number	Percentage
Positive attitude	150	75%
Negative attitude	50	25%
Total	200	100%

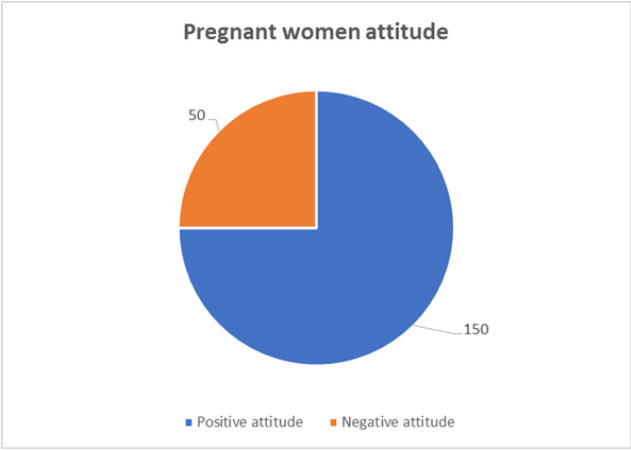

Figure 14: Pregnant women attitude towords obstretial ultrasound.

DISCUSSION

In this study, 90% of the respondents had good knowledge on obstetrical ultrasound. Residence, educational status, and parity were significantly associated with knowledge of

pregnant women on obstetrical ultrasound. Majority, 291 (69.5%), of the participants in this study had a positive attitude toward obstetrical ultrasound. Exposure to obstetrical ultrasound, knowledge on obstetrical ultrasound, and educational status were significantly associated with attitude of pregnant women to obstetrical ultrasound.

Majority of the women in this study, stated importance of obstetric ultrasound is about fetal sex determination where more than 50% of pregnant women knew about it. Similar findings in Mumbai, India, where knew about sex determination by obstetric ultrasound.

The least identified obstetric ultrasound knowledge in this study is knowledge regarding the determination of a congenital anomaly, in which only of pregnant women stated that an ultrasound scan is helpful in identifying congenital abnormalities. The finding is much lower than the study conducted in Uganda[27] and Jeddah.[6] This might be due to most of our participants' having no previous obstetric ultrasound scan experience and the low incidence of bad obstetric history among pregnant women, who might miss the wider importance of the ultrasound scan. Majority of our participants lacked higher education, and the difficulty of understanding congenital abnormalities and uterine abnormalities may also contribute to this problem. The setting of the study may also explain the discrepancy.

CONCLUSION

In this study, pregnant women's knowledge of obstetrical ultrasound scanning was (75%). The importance of ultrasound for sex determination is commonly reported by respondents, which is 76.1%. Knowledge of obstetric ultrasound is significantly associated with educational status of the pregnant women, parity, and residency.

ajority (90%) of pregnant women had a positive attitude toward the use of obstetric ultrasound. Whereas Pregnant women's attitudes toward obstetric ultrasound are significantly associated to their educational status, knowledge of obstetric ultrasound, and current exposure to obstetric ultrasound.

Therefore, ensuring that all antenatal women receive obstetric ultrasound scans will be helpful to prevent and manage obstetric complications and have a better pregnancy outcome, as recommended by WHO. Obstetric care providers should provide proper obstetric care, which includes regular obstetric ultrasound scans, and raise awareness about the positive effect of ultrasound scans on pregnancy outcomes for all antenatal women by giving special

attention to rural women and pregnant mothers without ultrasound scans to address their poor knowledge and attitude toward ultrasound scans. Furthermore, a periodic campaign targeting rural pregnant women with a full package of maternity care focusing on the positive outcome of obstetric ultrasound for every pregnancy should be implemented.

ACKNOWLEDGEMENT

Milestones in life are achieved, not by individual efforts but by blessings and guidance of elders, near and dear ones. This project is the product of collective wisdom and experience of all those who have shared their views far beyond those found within the covers of book. I therefore take this opportunity to express my acknowledgements to all of them.

Let me first thank almighty for giving me life and my parents for educating me and keeping my requirements in priority at all situations. Without their unconditional support and encouragement, it would have been impossible to pursue my interest.

It gives me immense pleasure to express my deepest thanks, heartfelt, indebtness and regards to my respected guide **Dr. K.C.Arul Prakasam, M.Pharm., Ph.D., Head**, Department of Pharmacy practice, JKKMMRF's-ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY, Komarapalayam, for providing much of the stimuli in the form of suggestions, guidance and encouragements at all stages of my work.

I am proud to dedicate my deep sense of gratitude to the founder, (Late) **Dr. J.K.K. MUNIRAJAH, M. Tech., (BOLTON) D.Lit.,** for providing us with a historical institution to study.

I owe my great debt of gratitude and heartful thanks to beloved Managing Trustee **Mrs. VASANTHAKUMARI MUNIRAJAH** and Correspondent **Mr.J.K.M. JAYAPRAKASH,** for providing me all the facilities and support for the successful completion of my thesis work.

I express my deep sense of gratitude and profound thankfulness to **Dr. N.SENTHILKUMAR M.Pharm., PhD.,** Principal, JKKMMRF's-ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY, Komarapalayam, for this whole hearted support and guidance which helped me to complete this project work in grand successful manner.

I express my whole hearted gratitude to **Mr. M. SENTHIL M.Pharm., Ph.D, Associate Professor, Mr. A.SRINIVASAN M.Pharm**, Associate professor, **Dr. GLADY GLORIA GRANT, Pharm.D**, Assistant professor, **Miss. A. RAMYA M.Pharm**, Assistant professor, Dept of pharmacy practice of JKKMMRF's – Annai JKK Sampoorani Ammal College of Pharmacy, Komarapalayam, for their invaluable advice, suggestion and encouragement extended throughout the work.

I express my thanks to all the teaching and non-teaching staffs of my college for their help, support and cooperation towards the completion of this work.

It is indeed a difficult task to acknowledge the services of all those gentle people who have extended their valuable suggestions and support directly or indirectly whose names have been unable to mention as they are like the countless Stars in the Galaxy.

LIMITATION

- The literature related to pregnant women's knowledge and attitude toward obstetric ultrasound is limited to discuss and hence is the limitation of the study.
- study was limited to only one particular group of people of a particular gender.
- The patients who visited the hospital on Saturday, Sunday and Monday were not able to be included in the study.
- Hesitation among pregnant women to get enrolled for the study.
- All the relevant data could not be collected due to hesitation by the pregnant women to provide complete information.

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Survey questionnaires

Patient demographics

Sex: Weight:

Allergies: Family history:

Social history: Education status:

Finance status:

Pre-medication history:

Post-medication history:

Final report:

Medication chart

1. Patient obstetric and maternal health services characteristic Total number of pregnancies?

a) 1-2.

b) 3-4.

c) 5-6

2. Previous pregnancy place of delivery.

a) Hospital.

b) Health centre.

c) Home.

3. Having bad obstetric history?

a) Yes.

b) No.

4. TT vaccine coverage?

a) Yes.

b) No.

Knowledge component on obstetric ultrasound of pregnant women

5. Do you know the importance of ultrasound to confirm pregnancy?

a) Yes.

b) No.

6. Do you know the importance of ultrasound to determine the sex of the baby?

a) Yes.

b) No.

7. Do you know the importance of ultrasound to determine the fetal position?

a) Yes.

b) No.

8. Do you know the importance of ultrasound to determine the expected date of delivery?

a) Yes.

b) No.

9. Do you know the importance of ultrasound to detect complication of pregnancy?

a) Yes

b) No

10. Do you know the importance of ultrasound to confirm the presence of multiple pregnancies?

a) Yes.

b) No.

11. Do you have good knowledge about obstetric ultrasound of pregnant women?

a) Yes

b) No

Attitude of pregnant women to obstetric ultrasound

12. Perceive that obstetric ultrasound is safe for mother?

a) Yes.

b) No.

13. Perceive that obstetric ultrasound is safe for fetus?

a) Yes.

b) No.

14. Do you comfortable during ultrasound examination?

a) Yes.

b) No.

15. Do you believe that pre natal. Sex determination is tight?

a) Yes.

b) No.

16. Do you believe that ultrasound finding is more accurate?

a) Yes.

b) No.

17. Ur attitude towards obstetric ultrasound?

a) Positive attitude

b) negative attitude