

2019



ULTRASOUND IN MIDWIFERY CARE

– THE FULL STORY

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Background

- Antenatal care (ANC) plays an important role in reducing maternal and infant morbidity and mortality. ANC links the pregnant woman and her family with the health system, which, in turn, increases the likelihood of assistance by a skilled birth attendant. The World Health Organization (WHO) recommends a minimum of four ANC visits.
- In low-income countries, ultrasound during pregnancy is generally provided by obstetricians, radiologists and medical officers, but a lack of trained healthcare providers and a shortage of ultrasound equipment are often barriers to its utilisation.
- Many pregnant women have a strong desire for ultrasound examinations to obtain information on fetal well-being and images of the fetus.



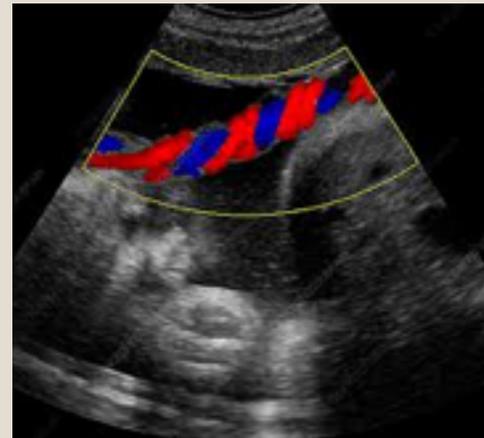
2D Diagnostic
image
From 6-42 weeks



4D High
Resolution
From 30 weeks



3D/4D Keepsake
image
From 28-36 weeks



Colour Doppler
on
Umbilical cord

What is ultrasound?

- An ultrasound scan uses **high-frequency sound waves** to create images of the inside of the body. It is **suitable for use during pregnancy**.
- 2D uses 2 -12 MHz while 4D uses 18-35MHz according to studies done by ISUOG.
- Ultrasound scans, or sonography, **are safe because they use sound waves or echoes to make an image, instead of radiation**. *Radiation was used in the 80's, not no longer in the new developed ultrasound systems.*
- Ultrasound scans are used to **evaluate** fetal development, and they can **detect** problems in the liver, heart, kidney, or abdomen. They may also **assist** in performing certain types of biopsy.
- Screening was meant to diagnose postdate and IUGR pregnancies, by monitoring Amniotic fluid indexes, Arterial Doppler Flows and grading of Placentas.
- **The image produced is called a sonogram.**

How do ultrasound scans work?

Last updated Fri 23 June 2017

Facts about ultrasound

- Ultrasound scans are safe and widely used.
- They are often used to check the progress of a pregnancy.
- They are used for diagnosis or treatment.
- No special preparation is normally necessary before an ultrasound scan.

How do ultrasound scans work?

Last updated Fri 23 June 2017

Is ultrasound safe?

- Having multiple ultrasound examinations during pregnancy is **unlikely** to cause any lasting harm to the developing fetus, according to a new study that confirms the long-term safety of the commonly used procedure.
- A study released 10 years ago by the same researchers showed that repeat pregnancy ultrasounds were associated with stunted growth among newborn babies compared with babies who were exposed to only one ultrasound during pregnancy. Updated studies show no harm to human fetuses.
- *But this **follow-up study** shows that there were **no long-term differences in the growth and development of the children involved in the original study.***
- Although ultrasound examinations during pregnancy are **widely accepted as safe** for both mother and child, researchers say the scientific evidence to back up that notion is not comprehensive. But researchers say these results should provide reassurance that **multiple prenatal ultrasounds** have no negative effects on the growth or development of the fetus.
- Increased awareness of safety issues should lead to adherence to the 'as low as reasonably achievable' (ALARA) principle in general and particularly during 3D/4D ultrasound examinations

Risks of Ultrasound

- Ultrasound is safe for you and your baby when done by your health care provider. Because ultrasound uses sound waves instead of radiation, it's safer than X-rays. Providers have used ultrasound for more than 30 years, and they have not found any dangerous risks.
- If your pregnancy is healthy, ultrasound is good at ruling out problems, but not as good at finding them. It may miss some birth defects. Sometimes, a routine ultrasound may suggest that there is a birth defect when there really isn't one. While follow-up tests often show that the baby is healthy, false alarms can cause worry for parents.
- You may know of some places, like stores in a mall, that aren't run by doctors or other medical professionals that offer "keepsake" 3-D or 4-D ultrasound pictures or videos for parents. The American College of Obstetricians and Gynecologists, the Food and Drug Administration and the American Institute of Ultrasound in Medicine do not recommend these non-medical ultrasounds. The people doing them may not have medical training and may give you wrong or even harmful information

Outcomes of studies

- **RUWANDA**
- Obstetric ultrasound was experienced as playing a very important role in clinical management of pregnant women, but participants emphasised that it should not overshadow other clinical examinations. The unequal distribution of ultrasound services throughout Rwanda was considered a challenge, and access was described as low, especially in rural areas. To increase the quality of maternity care, some advocated strongly for midwives to be trained in ultrasound and for physicians to receive additional training. In general, pregnant women were perceived both as requesting more ultrasound examinations than they received, and as not being satisfied with an antenatal consultation if ultrasound was not performed

Outcomes continue...

- **ZAMBIA**
- Point-of-care ultrasound is being increasingly implemented in resource-poor settings in an ad hoc fashion. We developed a focused maternal ultrasound-training program for midwives in a rural health district in Zambia. Four hundred forty-one scans were recorded by 21 midwives during the 6-month study period. In 74 scans (17%), the ultrasound findings prompted a change in clinical decision-making. Eight of the midwives were evaluated with a 14-question observed structured clinical examination (OSCE) and demonstrated a slight overall improvement with mean scores at 2 and 6 months of 10.0/14 (71%) and 11.6/14 (83%), respectively. Our pilot project demonstrates that midwives in rural Zambia can be trained to perform basic obstetric ultrasound and that it impacts clinical decision-making.

(Focused Maternal Ultrasound by Midwives in Rural Zambia <https://doi.org/10.1016/j.ultrasmedbio.2010.05.017>)

Skill comparison...

TRADITIONAL MIDWIFE SKILLS

- Dating by Negal's Rule
- Monitoring growth by palpation techniques
- Detecting fetal heart and rhythm only after 20 weeks gestation
- No detection of fetal abnormalities by palpations only
- Lower intervention rates by using midwife skills
- Lack of satisfaction due to not seeing the baby's development

ULTRASOUND DETECTION SKILLS

- Dating by measuring the early fetus
- Confirming fetal growth by measuring fetus and comparing by dates
- Detecting fetal heart and rhythm very early in pregnancy
- Early detection of risks in order to identify high risks and ensure better outcomes
- Higher incidence of unnecessary interventions
- Mothers are more satisfied with care providers findings during consultations

Midwives and sonography training

- On the road to becoming a specialist, the midwife trains in a sonography program that teaches him or her how to perform a variety of ultrasound techniques for OB-GYNE cases. Schools that have sonography training programs, offer them in three ways, one certificate and two degrees. The certificate course is 12 months long, the associate degree course 2 years long, and the baccalaureate course 4 years long to complete. These programs are offered by **CAAHEP accredited and ARRT** recognized schools. (INTERNATIONAL SCHOOLS)

The role of the midwife sonographer

- Midwives, especially those who are midwives in clinic settings as well as the independent midwife in private practice, are typically the primary caregivers of an OB-GYNE case, as part of the healthcare team. They specialize in the anatomy, physiology, and pathology of the reproductive system and are quite capable of handling the management of the patient. Because a midwife who has trained in sonography can analyze the results of the diagnostic exam, they can also intervene in real time once the procedure is completed. ***This saves a lot of time and can improve patient outcomes.***

Sonography and Ante Natal Care

- Sonography is very important in managing a pregnancy. The procedure is able to tell
 1. if the pregnancy is *viable and normal*, and
 2. if there *any* abnormalities in the child's growth and development or problems that the parents have to prepare for.

The benefits of this diagnostic procedure go both ways – for both the mother and the child – because their health statuses are monitored quite closely and **interventions are done timely and adequately.**

3. Unfortunately ultrasound leads to more unnecessary interventions and C/Sections in these modern days

- *Midwives who are looking for continuing education or want to become specialists can have a great career as a midwife sonographer specialist.*

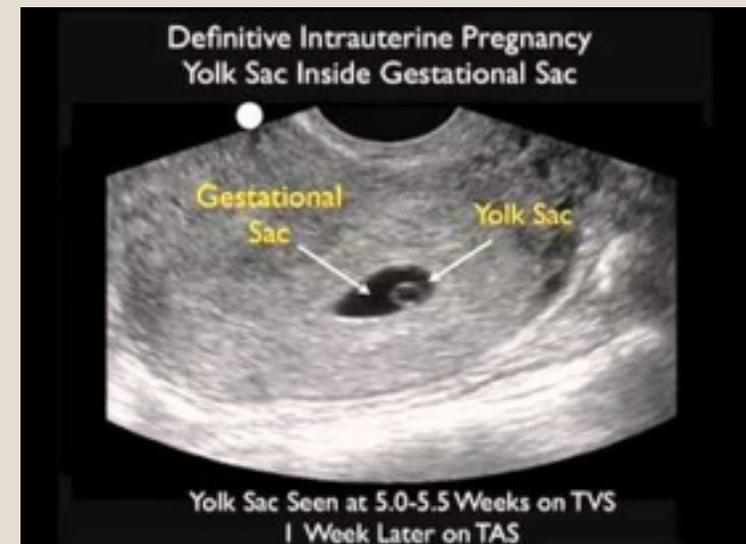
Midwife sonography keys:

STANDARD MONITORING

- Dating sonar (To determine EXPECTED DATE OF DELIVERY (CRL))
- Intra-Uterine Life (Placental site, Gestational sac, Fetal heart)
- Detecting twin pregnancies
- Monitor of fetal growth (IUGR) (6week growth monitoring (EFW), fetal heart)
- Detecting of reduced Amniotic fluid (AFI)
- Monitoring Placental Flow (RI)

SAFETY MONITORING

- Reduction of fetal movement
- Amniotic fluid index



South African Nursing Council

Assessment

- 2.2.1 Assesses, analyzes, and interprets community health needs relevant to Maternal, Neonatal, Child and Women's Health (MNCWH)
- 2.2.2 Assesses and screens streams of health care user of Reproductive Health Services, Preconception Care, Antenatal Care , Intrapartum Care, Postnatal Care and the Care of the Neonate to maximize the health during these Periods



South African Nursing Council
Regulating nursing, advocating for the public

RETRIEVED FROM THE SCOPE OF PRACTICE OF THE SPECIALIST MIDWIFE

www.sanc.co.za

SANC

- 2.2.3 Conducts community profile and establishes community diagnosis
- 2.2.4 ***Detects high risks factors and/ or complications of pregnancy, labour and puerperium***
- 2.2.5 ***Diagnoses problems and facilitates improvement of outcomes***
- 2.2.6 ***Diagnoses high risk factors and health problems of the neonate***

..... All the above could be done better if appropriate technology is used.

- * CTG's instead of Dopplers during labour
- * Ultrasound instead of palpations



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Training in South Africa



- **SASUOG** – South African Society for Ultrasound in Obstetrics and Gynecology
- “Improving the impact of the service requires appropriate use of limited SA resources by ensuring that patients with highest risk have access to practitioners with highest level of expertise, by:
 - Providing patient education on risk factors and risk assessment, by developing information leaflets and/or electronic resources, involving the lay press etc.
 - Improving pre-screening information and counselling so parents can clarify their position towards diagnosing fetal problems and options of invasive testing and TOP BEFORE they make use of scarce screening resources. *It will be feasible to **train MIDWIVES** to perform this function and to engage with genetic counsellors.* The use of decision-aids needs to be promoted. “
 -

SASUOG continue...



- **For Patients**
- Prenatal tests:
- Your clinician (Obstetrician, General Practitioner **or Midwife**) will request some tests to check that all is well with your pregnancy. Some are optional and may depend on whether you can afford them or not. The tests include the following:
- Routine tests to check your health and risks to the pregnancy
- Your A, B, O and Rhesus blood group and antibodies (to see if your baby is at risk of anemia or jaundice because your blood group differs from the baby's father's);
- Your hemoglobin level (to check if you are anemic);
- Antibodies against Rubella (German measles), HIV, hepatitis B and syphilis (to see if your baby is at risk of sustaining an infection before birth);
- Your blood glucose level (in some cases) (to check if you have diabetes, which might be underlying or brought on by the pregnancy);

SASUOG CONTINUE...



- Your blood pressure (to check if you have hypertension, which might be underlying or brought on by the pregnancy as in a condition called pre-eclampsia);
- Your urine (to check for a bladder infection, or for protein in your urine (which might also indicate preeclampsia or underlying kidney disease));
- A swab (in some cases) to check whether a bacterium called group B streptococcus is present in your vagina (this could cause a serious infection in the baby if born vaginally);
- ***A basic ultrasound scan to determine exactly how far you are pregnant, whether the baby is in the uterus (womb) and alive, whether there are twins or not, to check the amniotic fluid volume around the baby and the position of the placenta (afterbirth).***

Courses offered:

- **IMPILO MEDICAL SYSTEMS SA OFFER:**

1. BASIC OBSTETRIC SCANNING (very basic introduction course)

2. BASIC FETAL ANATOMY ULTRASOUND (**SASUOG APPROVED**) – Short course (3days)

** Pre-requisites – “Holders of a relevant health/medical qualification commensurate with and ultrasound qualification in Obstetrics. These could include Obstetricians, Medical Officers, General Practitioners, Midwives and Radiographers.”

3. ADVANCED OBSTETRIC SCANNING (focusing on Doppler Physics, Cardiac flow and Fetal anatomy)



Conclusion made:

- Obstetric ultrasound plays a significant role in maternity care in South Africa. Healthcare professionals have an important role to play in providing information to pregnant women and their families to facilitate informed decision making. The increasing demand for ultrasound examinations from pregnant women needs to be balanced in relation to medical indication and benefits in order to prevent overuse of obstetric ultrasound. Unequal access to obstetric ultrasound between rural and urban areas and between different socio-economic groups is a major problem. To increase access to ultrasound for all pregnant women in the country, it is suggested that **midwives are trained to perform basic ultrasound**. Increased availability of obstetric ultrasound would improve the quality of maternity care. Additional formal training of physicians in obstetric ultrasound is also recommended in order to increase the quality of ultrasound surveillance during pregnancy to improve maternal and fetal health outcomes

- Glob Health Action. 2017; 10(1): 1350451.
- Published online 2017 Aug 2. doi: 10.1080/16549716.2017.1350451
- PMCID: PMC5645676
- PMID: 28764602

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