

Perceptions and practices of antenatal women regarding ultrasounds in pregnancy at a rural maternity hospital, Ramnagara district, Karnataka

Radhika Kannan, Avita Rose Johnson, A P Roshni, Sr.Tini Thomas, Sr.Vini Varghese, Supriya Dodia, Sulekha Thimmaiah

Affiliation: Department of Community Medicine, St Johns Medical College, Bangalore

Date of Submission : 11-06-2019 **Date of online Publication** : 14-09-2019
Date of Acceptance : 26-08-2019 **Date of Print Publication** : 30-09-2019

***Author for correspondence:** Dr.Avita Rose Johnson, Department of Community Medicine, St Johns Medical College, Bangalore – 34. E-mail – avitajohnson@gmail.com

ABSTRACT

Introduction: With the wide availability and use of Ultrasonography (USG), the expectation of pregnant women towards USG or “scan” has dramatically increased but the actual knowledge regarding its use and its applications are lacking in them. **Objective:** To assess perceptions and practices of antenatal women about USG in pregnancy in a rural maternity hospital, South Karnataka. **Methodology:** A cross sectional study was conducted at a rural maternity hospital in Solur taluk of Ramnagara District, Karnataka. Antenatal women attending the outpatient services were selected by convenience sampling and administered a face-validated interview schedule. **Results:** Mean age of the 280 antenatal women interviewed was 23.66±3.39 years. 73.9% women had heard about USG prior to their pregnancy. All women felt that USG is important in pregnancy and 78.9% felt that a second trimester USG was the most important. Only 33.6% of women could name any three benefits of USG in pregnancy. Most women (97.5%) felt that USG is safe for the fetus. 98.5% women had done a scan in current pregnancy. The doctor had explained the need for scan and explained the results to 58.2% antenatal women. The number of scans per woman ranged from 1 to 7 in the current pregnancy and among them, majority (34%) had three scans. Only 0.7% of women felt that unnecessary USGs were being done. **Conclusion:** The perceptions and practices among the antenatal women were positive, but the women lacked awareness regarding the benefits of USG. The study identified a need for communication between the doctor and the antenatal women regarding the purpose of USG and discussion of the findings of USG with the mother.

Key Words: Ultrasonography, Pregnant women, Perceptions, Practices.

INTRODUCTION

Ultrasound technology or Ultrasonography (USG) has achieved universal coverage with particular importance in antenatal care⁽¹⁾⁽²⁾. It is a non-invasive, safe and economical mode of imaging that has become a tool for the obstetrician to monitor the well-being of the fetus⁽³⁾. For pregnant mother, ultrasound scan initiates a bond that promotes maternal-fetal attachment and alleviates anxiety⁽⁴⁾⁽⁵⁾⁽⁶⁾. Increased availability and usage of ultrasound screening and advances in the technical quality of ultrasound equipment has led to improved identification of fetal structural abnormalities. USG has become the primary method for fetal anatomic imaging and diagnosis for conditions pertaining to both mother and fetus⁽⁷⁾.

In many countries including South Asia, USG is routinely used within the health sector. The versatility and relatively low cost and high safety of antenatal ultrasound in comparison to other imaging techniques could justify the cause for its routine implementation in low-income settings⁽⁸⁾. In India, National Family Health Survey (NFHS)-4 data shows that the proportion of pregnancies

with ultrasound scan has increased to 61% in the years 2015-2016 from the previous proportion which was 24%, ten years ago⁽⁹⁾. The World Health Organization (WHO) recommends a single ultrasound before 24 weeks as a part of Antenatal care (ANC) in pregnancy. These ANC recommendations complement WHO's ongoing work in developing evidence-based guidance to improve quality of care provided to mothers and babies throughout the continuum of care⁽¹⁰⁾.

With the wide availability of USG, even in rural areas, there is an increased awareness and a certain expectation on part of the general public, especially the pregnant women towards ultrasound. With increased demands of USG, both on the part of the obstetrician as well as the mother, there is a need to document perceptions and practices of antenatal mothers in rural areas, regarding ultrasound in pregnancy. Better understanding of their concepts and ideas regarding ultrasound will help in formulating targeted interventions to address any misconceptions and lack of communication. The socio-

cultural factors, like education, income and parity are some of the factors likely to affect and influence their awareness, opinion and expectations from the antenatal scan. There is a paucity of literature in rural south India with regard to the perceptions and practices about ultrasound in pregnancy among antenatal women. This study hopes to fill that lacuna. Therefore, this study was conducted with the objective to describe the perceptions and practices about Ultrasound in Pregnancy among Antenatal mothers in Snehalaya Hospital, Solur, Ramnagara district, Karnataka and to compare the differences in perceptions among antenatal mothers with different sociodemographic and obstetric backgrounds.

METHODS

This was a cross-sectional study, conducted at a rural maternity hospital in Solur, Ramnagara District, Karnataka among pregnant women availing antenatal care services at the hospital. The sample size was calculated as 280, with 5% fixed precision and 95% confidence limits, based on a previous study where 76% women knew that USG was done for knowing the growth of the baby, delivery date and to identify defects in the baby⁽⁵⁾. Convenience sampling was done during two months in 2018, where any pregnant women availing antenatal care services at this hospital, except for those who were seriously ill, were invited to participate in the study. Informed written consent was taken from the participants, and a face-validated interview schedule was administered, which consisted of socio-demographic and obstetric details, perceptions on USG like need for ultrasound in pregnancy, number of scans required, fears that women may have while undergoing scan, and practice of USG like number of scans done in the current pregnancy, timings, who did the scan, person accompanying, anxieties and fears that the women went through and the amount spend on scan. Institutional Ethical Committee approval was obtained for this study and permission to do the study from in charge in Snehalaya Hospital Solur.

The data collected was entered in Microsoft Excel. The data was analyzed using a SPSS Version 16. Data was described in terms of frequencies, proportions, mean and standard deviation. Data was tested for normality using Shapiro Wilk test and found to be normally distributed. Tests of significance like chi-square test and Fisher’s exact test where applicable and independent sample t test were used to associate the outcome variables with various socio-demographic and obstetric variables. A p value of <0.05 was considered significant.

RESULTS

A total of 280 pregnant women were included in the study. Mean age of the participants were 23.66±3.39 years. The socio-demographic profile of the population is given in Table 1 and the obstetric details in Table 2.

Table 1: Sociodemographic profile of study population (n=280)

Variables	N (%)
Age in years	
≤19	19 (6.8)
20-24	164 (58.6)
25-29	81(28.9)
≥30	16 (5.7)
Education	
Illiterate	7 (2.5)
High school	187 (66.8)
Graduate	71 (25.4)
Post graduate	15 (5.4)
Occupation	
Housewife	271(96.8)
Working	9 (3.2)
Socioeconomic status(Modified BG Prasad)	
Upper	41(14.6)
Upper middle	100 (35.7)
Middle	69 (24.6)
Lower middle	44 (15.7)
Lower	26 (9.3)
Place of residence	
Rural	215 (76.8)
Urban	65 (23.2)

Table 2: Obstetric details of the study population (n=280)

Gravida	N (%)
Primi	182(65)
Multi	98(35)
Gestation (trimester)	
First	14(5)
Second	69(24.6)
Third	197(70.4)

PERCEPTIONS:

In our study, 207(73.9%) women had heard about USG prior to their pregnancy and 221(78.9%) felt that a second trimester USG is mandatory. Regarding the number of scans to be done in a pregnancy, most women were not aware of the exact number, 115(41.1%) felt that three scans are to be done.227(81.1%) women felt that it’s the scan doctor(radiologist) who should do the scan, 21(7.5%) thought that the delivery doctor(gynecologist) can do the scan and the remaining 32(11.4%) were not sure as to who should do an ultrasound scan. Their perceptions regarding USG in pregnancy are given in Table 3 and their perceptions on the purpose or the uses of USG shown in Table 4.

Table 3: Perceptions regarding USG in pregnancy (n=280)

Perceptions	Yes
USG is important in pregnancy	280(100%)
USG poses a risk to the fetus	6(2.5%)
USG poses a risk to mother	1(0.4%)
A costlier scan means better results	57(20.4%)
A bigger hospital means better USG results	39(13.9%)
The doctor is allowed to reveal gender of the fetus	7(2.5%)
Unnecessary scans are being done in pregnancy	2(0.8%)

Table 4: Perceptions regarding the uses of USG in pregnancy (n=280)

Perceptions	Yes
USG is done to confirm the pregnancy or date of delivery	171(61.1%)
USG helps to monitor the growth of the fetus	163(58.2%)
Helps to identify anomalies or defects	102(36.4%)
Used to identify the presentation (cephalic/breech)	55(19.6%)
To identify uterine anomalies	7(2.5%)
Early identification of twin pregnancy	6(2.1%)
To know the sex of the baby	2(0.7%)

PRACTICES: In the study population, 276(98.5%) women had done a scan in the current pregnancy and all of them were referred by the gynecologist for the scan. Out of 197(70.4%) women who had crossed 24 weeks, 186(66.4%) had done their anomaly scan. 123(43.9%) women had their scan done in a private hospital, 79(28.2%) in diagnostic centres and 78(27.8%) in government hospital. 236(84.3%) study population had their scans done by the radiologist. Most of the women 173(63.6%) had their husbands accompanying them for the scan, but only 8(2.9%) were allowed to have attender in the USG room. Other practices are given in Table 4.

Table 4: Practices regarding USG in pregnancy (n=280)

Practices	Yes
Had a scan in current pregnancy	276(98.5%)
Doctor explained the need for scan and results discussed	163(58.2%)
Subject was allowed to ask questions during the scan	152(54.3%)
Patient enquired about the gender of the baby	7(2.5%)
Attender was allowed in USG room along with the subject	8(2.9%)
Problems faced by subject during scan	
Tension/anxiety	45(16.1%)
Long waiting time	101(36.1%)
Cost	24(8.6%)
Report not explained	61(21.8%)

On measuring the association between sociodemographic and obstetric factors with the perceptions regarding the purpose of USG, a significant association was found with the mean years of education with p value =0.002 at 95% confidence interval. No significant association was found between other sociodemographic parameters and the difference in perceptions and practices regarding ultrasound among pregnant women (Table 5, 6, 7)

Table 5: Association between perception of ideal number of scans and various sociodemographic and obstetric factors (n=280)

Factors	≤3 Scans	>3 Scans	p value
	189(67.5%)	91 (32.5%)	
Mean Per capita income	4184.75	4477.59	0.654 [#]
Mean years of education	11.67	12.22	0.152 [#]
Obstetric score	Primi 108(60.7%)	70(39.3%)	0.431*
	Multi 63(66.3%)	32(33.7%)	
Residence	Rural 137(65.2%)	73(34.8%)	0.137*
	Urban 34(54%)	29(46%)	
Bad obstetric history	Yes 18(62.1%)	11(37.9%)	0.429*
	No 153(63%)	90(37%)	

Independent t-test, *chi-square test

Table 6: Association of perception regarding the purpose of USG with sociodemographic and obstetric factors (n=280)

FACTORS	≤3 correct reasons	>3 correct reasons	P VALUE (0.05)
	125 (44.7%)	155(55.3%)	
Mean PCI	4020.41	5368.89	0.089 [#]
Mean years of education	11.55	13	0.002 [#]
Obstetric score	Primi 143(78.6%)	39(21.4%)	0.108*
	Multi 85(86.7%)	13(13.3%)	
Residence	Rural 177(82.3%)	38(17.7%)	0.472*
	Urban 51(78.5%)	14(21.5%)	
Bad obstetric history	Yes 199(80.2%)	49(19.8%)	0.353*
	No 28(90.3%)	3(9.7%)	

Independent t-test, *chi-square test

DISCUSSION

Ultrasound technology has become an inevitable part of antenatal care, especially the scan between 18 to 24 weeks that is a part of the WHO guidelines on routine ANC. In our study 280 women were encountered and most of them had undergone an ultrasound scan, but the awareness regarding the need for ultrasound and its applications seem to be lacking among rural women. This could be due to lack of participation of women in health care. Rural women are often not encouraged to raise questions, especially to a treating doctor. This indicates a need for more women empowerment, equity and inclusion in all aspects of care.

Only 7(2.5%) women were illiterate in our study and was similar to the study conducted in Pondicherry by

Krishnamoorthy et al⁽⁴⁾. Most of the women, 271(96.8%) were housewives in our study and it was noticed that many of them had left their jobs during the period of pregnancy. Majority of women 207(73.9%) had heard about ultrasound scan prior to pregnancy and results were similar to study done in Denmark⁽¹¹⁾. 98.5% women had undergone scan in the current pregnancy which was comparable to the study in UK which had more than 96% women with at least one scan⁽¹²⁾. This indicates that women in our setting were willing to get the scan done and the facility was available at Snehalaya Hospital. This is a positive trend.

Table 7: Association of patient-doctor interaction with sociodemographic and obstetric factors.

FACTORS	Scan findings discussed		P VALUE
	Yes	No	
	163 (58.2%)	117(41.8%)	(0.05)
Mean PCI	4662.05	3725.8	0.134 [#]
Mean years of education	12.07	11.47	0.110 [#]
Obstetric score	Primi 71(39%)	111(61%)	0.207*
	Multi 46(46.9%)	52(53.1%)	
Residence	Rural 91(42.3%)	124(57.7%)	0.776*
	Urban 26(40%)	39(60%)	
Bad obstetric history	Yes 9(29%)	22(71%)	0.211*
	No 108(43.5%)	140(56.5%)	

Independent t-test, *chi-square test

Majority of women felt that ultrasound scan was done to confirm the delivery dates and to assess the growth and defects of the fetus, which was comparable to the study done by Dasan et al and Yadav et al⁽⁵⁾⁽¹³⁾⁽¹⁴⁾. Greater number of women in the second trimester had their routine anomaly scanning(94.4%) done in this study and were aware that an ultrasound could monitor, which could be attributed to their educational status(97.5%).

Few antenatal women (2.5%) had concerns if the ultrasound scan would harm the baby, a finding similar to a study done in rural Kenya by Oluoch et al⁽⁸⁾. Majority of women(97%) in our study were aware of the Pre-conception and Pre-natal Diagnostic Technique Act (PNDT), which was different from the study done in Rajasthan by Khatri et al⁽¹⁵⁾. This could be a direct reflection of the difference in socioeconomic status and education of the women in the two settings. There is a need to stress the safety of ultrasound while building the doctor patient trust.

Our study showed that all women were referred by the doctor for the scan and only 50% of them being informed about the reason for undergoing the investigation. This was coupled with the fact that sonographer did not communicate the results with almost 58.2% women, suggesting that half the women were unaware of why they underwent the procedure, finding similar to a study conducted in Ghana⁽¹⁶⁾. Hence the lacunae identified is the ineffective communication that is happening between the doctor and the patient. Proper explanation before the scan

regarding the need for the same and discussion of the findings of the scan needs to be stressed at all levels of care.

Conclusion

This study found that rural women have accepted ultrasound scan as a part of routine antenatal care and most of the study participants had undergone USG. Their perceptions regarding the importance of USG in pregnancy and its uses were found to be satisfactory but there needs to be more clarity regarding the safety, recommended number of scans and the quality and cost of scans in bigger hospitals.

Counseling for antenatal mothers on the use of USG, number of scans required and safety for the fetus is required as part of antenatal care to alleviate anxiety in their minds. Health care professionals involved in performing USGs should explain and discuss the findings of the USG with the mothers in order to allow them to participate more fully in their own health care. There is also a need to audit the practice of repeated and unnecessary USGs with in the health system.

References

1. Tautz S, Jahn A, Molokomme I, Gørgen R. Between fear and relief: how rural pregnant women experience foetal ultrasound in a Botswana district hospital. Soc Sci Med [Internet]. 2000 Mar [cited 2018 May 29];50(5):689–701. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/10658849>
2. Munim S, Khawaja NA, Qureshi R. Knowledge and awareness of pregnant women about ultrasound scanning and prenatal diagnosis. J Pak Med Assoc. 2004;54:[3] p.
3. Henderson J, Martin M. Ultrasound screening in pregnancy : Standing Group on Health Technology Chair : 2000;4(16).
4. Krishnamoorthy N, Kasinathan A. Knowledge and attitude regarding obstetric ultrasound among pregnant women : a cross sectional study. 2016;5(7):2192–5.
5. Dasan TA, Singh S, Koratagere S, Raja B, Rangaswamy NB. Knowledge and Attitude of Antenatal Women towards Routine Ultrasound Screening in Pregnancy at a Tertiary Institution in Bengaluru. Int J Anat [Internet]. 2016;5(4):11–4. Available from: <https://pdfs.semanticscholar.org/d9dc/b38ae64d23222cca412362165d7835ff892.pdf>
6. Enakpene CA, Morhason-Bello IO, Marinho AO, Adedokun BO, Kalejaiye AO, Sogo K, et al. Clients’ reasons for prenatal ultrasonography in Ibadan, South West of Nigeria. BMC Womens Health. 2009;9:1–8.



7. Weedn AE, Mosley BS, Cleves MA, Waller DK, Canfield MA, Correa A, et al. Maternal reporting of prenatal ultrasounds among women in the National Birth Defects Prevention Study. *Birth Defects Res Part A - Clin Mol Teratol.* 2014;100(1):4–12.
8. Oluoch DA, Mwangome N, Kemp B, Seale AC, Koech A, Papageorghiou AT, et al. ‘ You cannot know if it ’ s a baby or not a baby ’ : uptake , provision and perceptions of antenatal care and routine antenatal ultrasound scanning in rural Kenya. [Internet]. 2015;1–11.
9. India National Family Health Survey (NFHS-4) Government of India. [cited 2018 Jun 4]; Available from: <http://rchiips.org/NFHS/NFHS-4Reports/India.pdf>
10. Recommendations G. WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience : Ultrasound Examination Highlights and Key Messages from the World Health Organization ’ s 2016 Global Recommendations. 2018;1(November 2017):2013–6.
11. Larsen T, Nguyen TH, Munk M, Svendsen L, Teisner L. Ultrasound screening in the 2nd trimester . The pregnant woman ’ s background knowledge , expectations , experiences and acceptances. 2000;383–6.
12. Whynes DK, Diary P. Receipt of information and women ’ s attitudes towards. 2002;7–12.
13. Yadav JU, Yadav DJ. Ultrasonography awareness among pregnant women attending medical college hospital in Kolhapur District of Maharashtra , India. 2017;5(6):2612–6.
14. Majeed AI, Gul SS. Ultrasound Scanning and Prenatal Diagnosis : Its Knowledge and Cognisance in Pregnant Women of Islamabad Res ul ts. 2017;108–10.
15. Khatri M, Acharya R, Sharma G. Knowledge, Attitude and Practices (KAP) Related to Pre-Conception & Pre-Natal Diagnostic Techniques (PC & PNDT) Act Among the Antenatal Women in Bikaner. 2012;1(1):1–7.
16. Mensah YB, Nkyekyer K, Mensah K. The Ghanaian Woman ’ S Experience And Perception Of Ultrasound Use In Antenatal Care. *Ghana medical Journal.* 2014;48(1):31-8.

Conflict of Interest : None

Source of funding support: NIL

© Community Medicine Faculties Association-2019

NJRCM: www.commedjournal.in