

Knowledge, Expectations and Source of Information of Pregnant Saudi Women Undergoing Second Trimester Ultrasound Examination

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Abstract

Background: In Saudi Arabia, most antenatal units offer routine Ultrasound Scan (USS) in early and mid-trimester of pregnancy. USS examination is essential source of information for the obstetrical management of the pregnancy as well as a source of joy and reassurance for the mother about the wellbeing of her baby.

Methods: A cross-sectional survey was conducted at the obstetrics ultrasound department at King Khalid University Hospital in Riyadh, Saudi Arabia. A questionnaire was designed to investigate the knowledge of the mothers about the purpose of the USS, their expectations and the source of the information provided to them about the mid-trimester USS examination in addition to the respondents demographic characteristics. Descriptive statistics were used for demographic variables. Association between women's source of information and educational level was analyzed with chi-square test. $P < 0.05$ was considered significant.

Results: 600 women consented and completed the questionnaire. Most of the participants were 21-30 years of age and (51.4%) had university education or higher while only 1.8% of the respondents were illiterate. 28-30% of the respondents thought the purpose of the scan is to know the gender of the baby or to confirm that the baby is alive. Only 20% of the respondents reported purposes of the USS examination was to screen for congenital malformations. The obstetrician was the main source of information and the nurse was the least. The utilization of any source of information about USS examination increased with the increase of the level of maternal education.

Conclusion: Saudi mothers' knowledge about the purpose of mid-trimester USS is modest. Utilization of healthcare providers other than the obstetrician and contemporary technology for information provision will improve mothers' knowledge and choices and put them at the center of health care.

Keywords: Mid-trimester ultrasound scan; Saudi pregnant women

Background

Worldwide Ultrasound Scan (USS) has become an essential part of antenatal care [1]. In Saudi Arabia, most antenatal units offer routine USS in early and mid-trimester of pregnancy. USS is used for confirmation of gestational age, identifying multiple pregnancy, confirming fetal viability, estimating date of birth and localizing the placenta [2-4]. A mid-trimester fetal USS performs at 18-22 weeks of gestation provides diagnostic information that directs the antenatal care for the best outcomes for the mother and her fetus, including fetal growth and wellbeing [1]. However one of the main purposes of the mid-trimester USS is detection of structural abnormalities especially in communities with high rate of maternal diabetes and recessive genetic abnormalities. In a recent study routine mid-trimester USS detected nearly 70% of major structural abnormalities in unselected population [4].

USS is very attractive to parents because it gives visual confirmation of pregnancy and reassurance of the baby's well-being [1]. The examination was reported to be a source of joy and comfort to the mother as long as the findings were normal [5].

Mothers' expectations from USS vary between different communities, and are influenced by the culture and the norms of these communities [6-8]. In the West, mothers' expectations from USS have changed over time, but in most cases remained unrealistic due to deficient pre-examination information provided [5,9]. There are many controversies about offering routine USS for screening of fetal anomalies in setting where termination of pregnancy is restricted by law [9], such as in Saudi Arabia, where termination of pregnancy is allowed after 120 days from conception, only if the fetus has

severe abnormality that is not treatable or compatible with life [10]. Although routine screening USS could be a source of anxiety in these settings, especially that the prevalence of genetic diseases is high due to consanguinity [11], however in-utero diagnosis of some structural abnormalities, which are not related to genetic disorders, e.g. structural heart abnormalities, might improve the outcome for these babies by giving the chance for early referral to specialized centers for treatment. This study investigates the expectations and the source of information of Saudi pregnant women undergoing mid-trimester USS.

Method

This was a cross-sectional survey conducted at the Obstetrics Ultrasound Department (OUD) at King Khalid University Hospital (KKUH) in Riyadh, Saudi Arabia (SA). The department of obstetrics and gynecology at KKUH has a delivery rate of 3500-4000 birth per year. All women who are booked for delivery in the hospital are

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offered a mid-trimester (18-24 weeks) anomaly USS to screen for fetal structural abnormalities. The OUD provides services for more than 16,000 ultrasound scan per year including anomaly USS.

The study was conducted among women who were attended OUD for their mid-trimester scan between the 1st of December 2011 and the 30th of June 2012. Ethical approval for the study was granted by the Institutional Review Board of King Khalid Teaching Hospital. The women received verbal information about the purpose of USS from the attending doctor in the antenatal clinic, however there was no standardized written information given to the women before the examination. The USS was conducted in a separate examination room in obstetric USS department. The mother is shown the image of the baby at the end of the examination and a printed image of the baby is given to the mother on request. The examination was conducted by certified sonographers supervised by a medical doctor specialized in obstetric ultrasound scanning.

Included in this study were all pregnant women who present to the OUD for their midtrimester USS irrespective of their parity.

Exclusion criteria were:

1. Pregnant women who were coming for ultrasound examination other than for to utine midtrimester USS.
2. Women who have already done their midtrimester scan for this index pregnancy.
3. Women with previous pregnancy diagnosed with congenital abnormalities.

Women, who met the inclusion criteria and consented to join the study, completed a self-administered questionnaire before the commencement of the ultrasound examination. For illiterate women the consent form was explained and they used a thumb stamp to indicate that consent for the interview. For all illiterate woman one of the investigators read the interview and reported the responses.

The questionnaire was designed to assess the knowledge about the purpose of the mid-trimester USS and the expectation of the pregnant women undergoing USS examination. The used questionnaire was derived from published literatures on pregnant women's knowledge about and expectations from USS. It was critically reviewed by topic expert (an obstetrician) to assess the contents validity and assure the cultural appropriateness and to avoid any repetition. Subsequently modifications were made. The questionnaire was developed in English then translated to Arabic then to English again. It took 10-15 minutes to complete. Subsequently it was piloted on 20 pregnant women and minor changes were made. Pilot study questionnaires were excluded from analysis.

The questionnaire consisted of three parts; the first part included questions about the woman's socio-demographic background and obstetric information such as parity and gravidity. This part was completed by the attending nurse in the OUD. The second part focused on the participant's knowledge about the purpose of the USS and the source of such information including the medical and the nursing staff, the internet or the press. Multiple choices were given as answers for this part of the questionnaire and the participant allowed multiple responses. The third part of the questionnaire included questions about the participant's expectations from USS. The mother's expectation choices included; to see the baby, to know the gender of the baby, to know that the baby is alive, to know the gestational age and the expected day of delivery and to know if the baby has any congenital abnormalities. Included in this part as well is a question about the

attitude of the respondent towards having an USS if she knew that it will detect fetal anomalies. Similar to the second part this section of the questionnaire allowed multiple responses.

Statistical analysis

Data were analyzed using SPSS, version 18.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were used for demographic variables. Association between women's source of information, and parity, age and educational level was analyzed with chi-square test. $P < 0.05$ was considered significant.

Results

During the study period 681 women met the inclusion criteria and 600 women consented and completed the questionnaire. The demographic characteristics of the study sample are shown on (Table 1). Most of the participants were young 21-30 years of age and more than half of them had university education or higher (51.4%), while only 1.8% of the respondents were illiterate.

The knowledge of the participants about the purpose of the USS is shown in Tables 2 and 3. Almost one third of the respondents thought the purpose of the scan is to know the gender of the baby, to check the baby's growth or to confirm that the baby is alive. Very low percentage of respondents checked detection of fetal anomalies as purposes of the USS examination.

The obstetrician was the most frequent source of information about anomaly USS among the participants of the study and the nurse was the least frequent source (Table 3). Knowing the gender of the baby was the most frequent expectation from the participants and reassurance about the absence of congenital malformations was the least frequently reported expectation (Table 4). There was an increased trend of utilization of any source of information with increased level of education with the least utilization from illiterate women to the

		N	%
Age	15-20	53	9.1
	21-30	328	56.1
	31-40	175	29.9
	>40	29	5
Parity	Primigravida	237	39.8
	Multigravida (2-5)	297	49.8
	Grand-multigravida >5	62	10.4
Gestational Age	<20 weeks	252	42.4
	20 weeks or more	343	57.6
Educational level	Illiterate	11	1.8
	Primary School	39	6.5
	Secondary School	52	8.7
	High School	189	31.6
	University and above	308	51.4

Data expressed as n (%)

Table 1: Demographic characteristics of participants.

Source of information	Number of responses	Percentage from total responses
Obstetrician	339	75.50%
Internet	193	16.00%
Friends or family	191	40.50%
Media (Press, TV, Radio)	182	43.00%
Nurse/USS technician	72	42.50%

USS: Ultrasound Scan

Table 2: Source of participants' information about mid-trimester USS examination.

maximum utilization of the university graduates (Table 5). Most of the respondents, 67%, would have opted not to have USS if they knew that it would uncover fetal congenital abnormalities.

When primigravida and multigravida were compared, both group defined obstetricians, nurses and media as source of information in a comparable percentage; however, primigravidas reported the internet more frequently (22.0% versus 18.0%) and family/friends (23.0% versus 17.0%) than multigravidas (p-value 0.05). In addition Older women (40 and above) labeled obstetricians as their source of information more frequently than younger women (15-20 years), 44.0% compared to 28.0%, however, younger women identified the internet (22.8%) and Family/friends (27.2%) more frequently than older women (9.4% used internet and 15.6% for Family/friends), p-value was 0.07.

Discussion

Our study showed that the knowledge of this cohort of Saudi pregnant women about the purpose of mid-trimester USS is modest and that the most common expectation of the respondents from USS examination is to know the gender of the baby and the least common is to know if the baby has congenital malformation. We found a noticeable influence of maternal education level on seeking information about USS examination.

Contrary to studies from the West [5], more than 60% of the mothers

Expectation	Number of responses	Percentage from total responses
To know the gender of the baby	180	30.00%
To check for the baby's growth	172	28.00%
To check that the baby is alive	167	28.60%
To know the gestation age and the expected day of delivery	154	26.60%
To know if the baby has any congenital abnormalities	123	20.50%
To determine the number of babies	73	12.10%
To check the water of the baby	56	9.00%
To localize the placenta	55	9.10%

USS: Ultrasound Scan

Table 3: Obstetricians' purpose for USS from the perspective of the participants.

Expectation	Number of responses	Percentage from total responses
To know the gender of the baby	392	65.20%
To see the baby	168	28.00%
To know that the baby is alive	159	26.50%
To know the gestation age and the expected day of delivery	135	22.50%
To know if the baby has any congenital abnormalities	119	19.80%

Data expressed as n (%). USS: Ultrasound Scan

Table 4: Participants' expectations from mid-trimester USS examination.

Source of information for USS examination	Level of education					Total number using the source	p-value
	Illiterate	Primary School	Secondary School	High School	University and above		
Friends and family	1 (9.1)	6 (15.4)	10 (19.2)	64 (33.9)	110 (35.7)	191 (31.8)	0.008
Internet	1 (9.1)	5 (12.8)	11 (21.2)	53 (28.0)	122 (39.6)	193 (32.3)	<0.00
Media (press, TV, Radio)	1 (9.1)	6 (15.4)	11 (21.2)	44 (23.3)	120 (39.0)	182 (30.3)	<0.00
Nurse	2 (18.2)	7 (17.9)	3 (5.8)	17 (9.0)	43 (14.0)	72 (12.0)	0.171
Obstetrician	3 (27.3)	22 (56.4)	20 (38.5)	105 (55.6)	189 (27.3)	339 (56.6)	0.008

Data expressed as n (%). Percentage calculated from total responses; USS: Ultrasound Scan

Table 5: Association between participants' level of education and the source of information about mid-trimester USS examination.

in this cohort expected the USS examination to show the gender of the baby. Such information is important to many families in the Middle East and it has major psychological impact on the mother and whole family [12]. The few published studies from the Middle East about the expectations of the mothers from the USS examination showed that high percentage of the respondents was expected to know the gender of the baby and felt disappointed when they were not directly told or when the gender was opposite to that they were hoping to have [6,7,12].

The modest knowledge of the mothers about the purpose of the USS is a reflection of the lack of information provided to the mother and the limited source of formal information to the attending obstetrician. The deficiency of information was demonstrated once more by the high percentage of mothers, who would opt not to have the examination if they knew that it might uncover fetal anomalies. We believe these findings call for improving the information given to the mother or the parents about the purposes of the USS examination including screening for congenital malformations and that the parents can choose not to know the abnormality or not to have the USS. Deficient information delivered to the parents, about the purposes of the USS and the limitation of the technology was reported in previous studies [9,13]. However recent reports showed that in some communities, women were more realistic about their expectations from USS examination and they were well informed about the purposes of the examination [14].

Most of the respondents got the information about the purpose of the USS examination verbally from the attending obstetrician, while nurses were the least reported source of information. This response is different from most other reports where nurses and midwives give the information about the USS and perform the scanning [15]. The utilization of healthcare professionals, other than doctors, in many aspects of the obstetrics care provision, is increasingly recognized to be pivotal for improving the quality of care for pregnant women [16-18]. In the setting of this study non-medical staff performs the USS; however it is the medical doctor who explained to the mother the purpose of the USS and the results of the examination. In the absence of written information, it is not supervising that more than 60% of the respondents did not know that the examination might uncover congenital abnormalities of the fetus.

The demographic characteristics of the mothers in this study show changes when compared to the demographic characteristics of earlier Saudi Cohorts of pregnant women [19-21]. There is noticeable reduction in the rate of teenage pregnancies and illiteracy and increase in higher education among this study group compared to studies reported these parameters a decade or more ago [19-21]. This might explain the relatively high use of media and Internet by the mothers to get information about the fetal USS examination especially young age group and primigravidas. Recent studies reported increased interest of pregnant women and those planning pregnancy, on information provided in the internet about pregnancy [22], in addition many

countries, such as the United Kingdom, are working towards patient-led health services by utilizing the Internet for health services provision [23]. We believe that the fact pregnant women use the Internet and the media to get information about the USS examination in pregnancy, should be utilized to provide wide range of pregnancy health information to a large population of pregnant women in the Kingdom.

We aware of the limitation of this study including the use of closed end questionnaire rather than focus group interview or open ended questionnaire, which would have given in depth review about the women opinion and knowledge. In addition limiting the study population to a single center which limits generalization of the results to other Saudi women. Another limitation is that we did not seek the opinion of the fathers about the purpose of the USS.

Conclusion

Saudi mothers' knowledge about the purpose of mid-trimester USS is modest. Utilization of healthcare providers other than the obstetrician and contemporary technology for information provision will improve mothers' knowledge and choices and put them at the center of health care.

Authors' Contributions

Hayfaa Wahabi conceived the idea of the study participated in the interpretation of the data and written the final draft of the manuscript, Nadia Channa participated in the study design and the data collection, Abdul-Razaq Masha participated in the study design, Samia Esmail participated in the data management and analysis, Ghadeer Al-skeikh participated in the study design, Amel Fayed analyzed the data and participated in the results interpretation,

Ahmed Abdulkarim participated in the study design. All authors read the final draft of the manuscript and approved it.

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