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Evaluation of the Role of Ultrasound in Pregnancy Outcome

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Abstract: Background: In many parts of the world, ultrasound scans are now considered as standard prenatal care techniques for both screening and diagnosis. For low-risk individuals, ultrasonography is used as a screening technique to determine gestational age, the presence of multiple pregnancies, and fetal abnormalities. Aim: This paper is interested to study the evaluation of the role of ultrasound in pregnancy outcomes. Material and Methods: This paper was interested to study the role of ultrasound in pregnancy women in Iraq. In fact, all most of the previous studies were focused on the impact of ultrasound on pregnant women before, during, and after the process in the hospitals, while our study focused on the importance of ultrasound on fetal and women as well as visits that occurred between patient-doctors. To follow-up, this study specialized to follow patients in different hospitals in Iraq outcomes analyse with 50 patients in 2021-2022 years. This study used SPSS and Excel programs in the assessment and distributions of patients. This study was chosen 50 patients to analysis the role of ultrasound in pregnancy women. Perhaps it can extend in the ultrasound assessment on patients in the present and future. Results and Discussions: With regard to previous studies, where our study discovered that specialists on previous studies had not provided sufficient information to pregnant women during pregnancy. Chan's study showed that ultrasounds did not identify multiple pregnancies. On the contrary, our study showed the percentage of women with multiple pregnancies based on our analysis of the statistics specified in the programs and based on ultrasound technology, which appears in this current study that pregnant patients who visited private doctors may have greater knowledge in the use of ultrasound during pregnancy than Pregnant patients in state hospitals, which we determined based on 50 patients. Conclusion: Our study adequately assessed patients to a large extent showing significant differences compared to previous studies. To prove this, our study showed that major anomaly in the fetus, multiple pregnancy, labor induction, and fetal death in a small percentage of patients showed pregnancy, and perhaps the result of an ultrasound examination was more accurate. Also, the evaluation of the role of ultrasound found that Fetal growth, morphology, and genetic abnormalities are the highest evaluating without other transactions.

Keywords: ultrasound; Oligohydramnios; Gestational diabetes; Morphology; and Genetic abnormalities.

INTRODUCTION

In many parts of the world, ultrasound scans are now considered as standard prenatal care techniques for both screening and diagnosis. For low-risk individuals, ultrasonography is used as a screening technique to determine gestational age, the presence of multiple pregnancies, and fetal abnormalities (Garcia, J. *et al*., 2002; Seeds, J.W. 1996). Patients without identified risk factors are more likely to experience congenital abnormalities. The best period of an anomaly scan is between 18 and 20 weeks when it is feasible to detect most abnormalities (Tunon, K. 1998). While a large percentage of pregnant women respond favourably to ultrasound usage throughout pregnancy, many women, especially those from poorer sociodemographic categories, report experiencing worry about the prospect of receiving unfavourable news (Bricker, L. *et al*., 2000).

In the case of pregnant women, ultrasound examinations are performed to detect cases of increased risk of maternal or fetal problems. By performing these evaluations, normal growth and development in utero are accurately determined, the gestational age, weight, and height of the baby are estimated, and at the same time, that fetal weight at the time of delivery can be projected (Rayburn, W.F. *et al*., 2015). In short, it is the way of clinically examining the patient before he is born. For this reason, it is essential that they be carried out by a professional with adequate training and training in high-level centers since they are often key in the management and decision-making during pregnancy (Rice, P.L. and Naksook, C. 1999).

The first exam is done before ten weeks to confirm the diagnosis of pregnancy, its location, gestational age, number of embryos, and normality of the structures typical of pregnancy (Larsen, T. *et al*., 2000). With the application of the color Doppler, the embryonic heartbeat can also be heard. The second examination is usually performed through the abdomen between 11 and 14 weeks of pregnancy to evaluate the fetal anatomy and rule out significant structural abnormalities (Lalor, J.G. and Devane, D. 2007). The risk of some chromosomal abnormalities can also be detected

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by measuring the thickness of the tissue in the nuchal region or nuchal translucency, the presence of the nasal bone, and the flow in the ductus venosus. During this exam, you can get to know the gender, which is confirmed after the 18th to 20th week or fifth month (Eurenius, K. *et al*., 1997; Basama, F.M.S. *et al*., 2004).

The third exam takes place between weeks 22 and 26 of pregnancy. There, fetal anatomy and placental uterine irrigation are studied in detail (Chan, L.W. *et al*., 2008). Most of the severe anatomical alterations can be diagnosed, as well as fetal growth and characteristics of the placenta, among others. Also, determine the risk of preterm birth by measuring the cervix transvaginally. The fourth examination, on the other hand, is carried out between 32 and 34 weeks of gestation (Larsen, T. *et al*., 2000; www.sagem.gov.tr).

The ultrasonographic examination has three technical bases that are used in the evaluation of pregnancy (Grandjean, H. *et al*., 1998). The conventional two-dimensional is the classic obstetric ultrasound, which can be performed abdominally or transvaginally depending on the gestational age or what you want to observe. Color Doppler sonography is the conventional ultrasound examination, which is associated with the evaluation of maternal and fetal blood circulation. This allows for evaluating the function of the placenta and thus estimating the contribution of oxygen and nutrients that would be reaching the fetus from the maternal circulation (Boyd, P.A. *et al*., 1998).

On the other hand, three- and four-dimensional eco-tomographies are state-of-the-art technology and a complement to conventional ultrasound. They allow the child to clearly visualize its shape and volume, generating very clear body images or segments. In addition, in the case of four-dimensional ultrasound, fetal movements can be observed in real-time (NCRP. 1992).

It is important to clarify that carrying out this type of examination is not necessary since the diagnosis is basically made using the conventional or two-dimensional mode (Levmore-Tamir, M. *et al*., 2015). A good visualization of the studied structures in 3D depends on various factors that must be met, such as the amount of amniotic fluid, the position of the fetus, of the placenta, which explains why the expected images are not always achieved (Levmore-Tamir, M. *et al*., 2015). This paper is interested to study the evaluation of the role of ultrasound in pregnancy outcomes.

PATIENTS AND METHODS

This paper was interested to study the role of ultrasound in pregnancy women in Iraq. In fact, all most of the previous studies were focused on the impact of ultrasound on pregnant women before, during, and after the process in the hospitals, while our study focused on the importance of ultrasound on fetal and women as well as visits that occurred between patient-doctors. To follow-up, this study specialized to follow patients in different hospitals in Iraq outcomes analyse with 50 patients in 2021-2022 years. This study used SPSS and Excel programs in the assessment and distributions of patients. This study was chosen 50 patients to analysis the role of ultrasound in pregnancy women. Perhaps it can extend in the ultrasound assessment on patients in the present and future.

To start building, this paper was started with presenting the characteristics of patients according to age, education level in choice (primary, secondary, college), gravidity one and greater than 2), and occupation (employed and unemployed), where can see all these details in Table 1, Table 2, Table 3, and Table 4.

To extend the evaluation, this paper was presented the visits related to doctors, where it can divide into three sections (previous visits to state-employed obstetrician, previous visits to private obstetrician, and previous visits to family physician) which can be shown in **Figure 1.** To further of evaluations, this study was assessed the role of ultrasound on pregnant patients based on Fetal growth, Morphology, Amniotic fluid volume, Genetic abnormalities, Placental site, and Fetal intelligence, where it can be seen in **Table 6.**

Moreover, this paper is interested to evaluate the negative results of ultrasound during the initial detection, where distribute into Major anomaly in the fetus, Multiple pregnancy, labor induction, and Fetal death, and these details have been seen in Table **7.** To the correlation side, it presented a correlation of negative outcomes for the ultrasound role based on R-correlation and Sig that be seen in Table 8**.**

RESULTS

Table-1: Characteristics of patients according to age

	Age patient

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N	**Valid**	**50**
	Missing	**4**
Mean		25.1200
Median		25.0000
Mode		20.00
Std. Deviation		4.95136
Skewness		.480
Std. Error of Skewness		.337
Range		14.00
Minimum		20.00
Maximum		34.00
Sum		1256.00

Table-2: Characteristics of patients according to education level

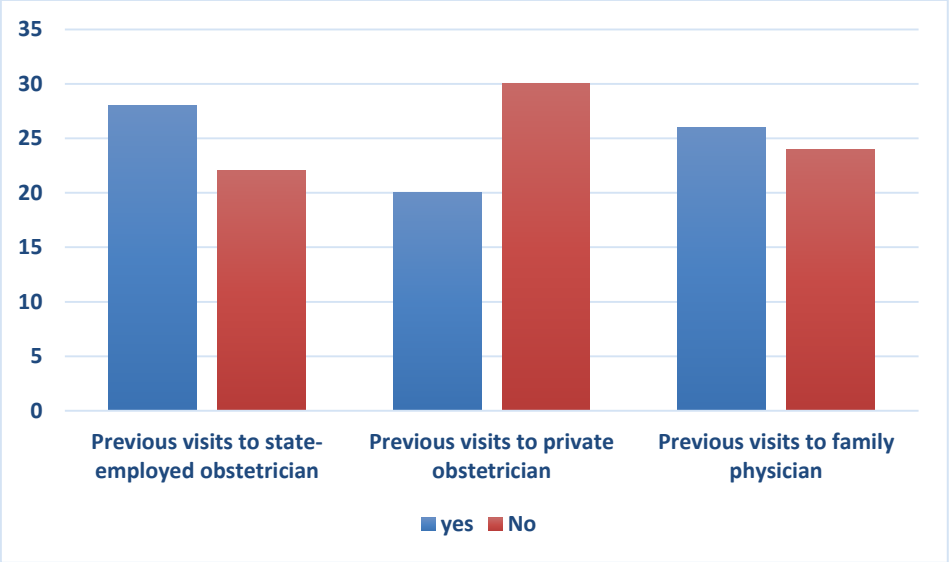
Education					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid		4	7.4	7.4	7.4
	College	18	33.3	33.3	40.7
	primary	8	14.8	14.8	55.6
	secondary	24	44.4	44.4	100.0
	Total	54	100.0	100.0	

Table-3: Characteristics of patients according to Occupation

Occupation					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid		4	7.4	7.4	7.4
	employed	23	42.6	42.6	50.0
	unemployed	27	50.0	50.0	100.0
	Total	54	100.0	100.0	

Table-4: Characteristics of patients according to gravidity

Gravidity					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid		4	7.4	7.4	7.4
	>2	34	63.0	63.0	70.4
	1	16	29.6	29.6	100.0
	Total	54	100.0	100.0	



Figiure-1: All visits related to patients-doctors.

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Table-5: Patient-related reasons for using ultrasound

Variables	Frequency (N=50)	Percentage
Placental abruption	15	30
Polyhydramnios	18	36
Oligohydramnios	10	20
Gestational diabetes	7	14

Table-6: Assessment of the Role of Ultrasound on the pregnant patients

Variables	Score
Fetal growth	8±0.9
Morphology	7±1.2
Amniotic fluid volume	6.3±0.75
Genetic abnormalities	8±1.33
Placental site	7±1.5
Fetal intelligence	6.4±0.55

Table-7: Negative results of ultrasound during the initial detection

Variables	Frequency	Percentage (%)
Major anomaly in the fetus	2	4%
Multiple pregnancy	2	4%
labor induction	1	2%
Fetal death	1	2%

Table-8: Correlation of negative outcomes for the ultrasound role

Variables	Disadvantages outcomes	ultrasound
R-correlation	1	+ 0.92
Sig	1	0.001
N	50	50

DISCUSSION

A cross-sectional study was conducted for pregnant patients, as it showed in this study the role of ultrasound and detection of the primary results in pregnant patients. This study was carried out on taking data and a complete survey of pregnant patients in different hospitals in Iraq. Detecting and analyzing the results accurately, but our study is considered insufficient due to the importance of this technique, which results in a lack of knowledge and final evaluation of pregnant women, with regard to previous studies, where our study discovered that specialists on previous studies had not provided sufficient information to pregnant women during pregnancy. Chan's study showed that ultrasounds did not identify multiple pregnancies. On the contrary, our study showed the percentage of women with multiple pregnancies based on our analysis of the statistics specified in the programs and based on ultrasound technology, which appears in this current study that pregnant patients who visited private doctors may have greater knowledge in the use of ultrasound during pregnancy than Pregnant patients in state hospitals, which we determined based on 50 patients, which may allow the examination to be longer for patients. In relation to this, the current study presented a study of all the characteristics of age, education, and employment status, and our study showed that women in the secondary stage and those who are not employed are more susceptible to injury, and it was also noted that women with multiple pregnancies have the highest level of knowledge at ages over 30 years. A study showed that there is a strong correlation between the level of education of women and knowledge of ultrasound, which predicted that women who live in the countryside or outside the capital have been found more vulnerable than women in the city, as well as compared to another study in China. Moreover, a study in a full and general evaluation of women detected pregnancy and found that it was determined by a rating of 10 using ultrasound where it was determined that fetal growth, morphology, and genetic abnormalities have a high comparison with other transactions. Furthermore, this study ensured that Placental abruption and

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Polyhydramnios were found to have the highest score frequency of patients.

CONCLUSION

Most studies are no longer sufficient to know the use of ultrasound during pregnancy sufficiently, which makes the occurrence of wrong results in the patient's conclusions and timings regarding pregnancy. However, our study adequately assessed patients to a large extent showing significant differences compared to previous studies. To prove this, our study showed that major anomaly in the fetus, multiple pregnancy, labor induction, and fetal death in a small percentage of patients showed pregnancy, and perhaps the result of an ultrasound examination was more accurate. Also, the evaluation of the role of ultrasound found that fetal growth, morphology, and genetic abnormalities are the highest evaluating without other transactions.

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