

Understanding Women's Perspectives on Dating Scan: Knowledge, Attitudes, and Behaviors

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Abstract

Objective: To determine the knowledge, attitude and practice among women of reproductive age group regarding benefits of dating scan.

Material and Methods: A cross sectional study was conducted in the Out Patient Department (OPD) of Obstetrics & Gynecology at Central Park Teaching Hospital from November 2021 -April 2022. The married women of reproductive age from 15-45 years were recruited in the study via structured questionnaire. The relationship between the categorical variables was determined by chi-square test by keeping the p value ≤ 0.05 .

Results: The average age was 32.09 + 6.96 SD years. Out of all, 103 (25.8%) females were illiterate. Around 35% of the females were matric and below and remainder were above matric to masters. Majority of participants had knowledge about the importance of dating scan in assessment of fetal viability 73.8% (n=295) followed by number of fetuses 70.0% (n=280). While least of study participants (10%) had knowledge of screening of down syndrome, other knowledge parameters were also poorly known by study population. About 23.6% of the females said that they never had dating scan in any pregnancy.

Conclusion: The majority of participants had significantly adequate knowledge regarding importance of dating scan for the detection of fetal viability. Moreover, significantly inadequate knowledge and practice was observed regarding getting it done for calculating accurate dating, congenital abnormalities and screening for Down's syndrome through nuchal translucency.

Keywords: dating scan, knowledge, fetal, attitude, reproductive age, anomalies.

How to cite: Sultana N, Ahmed H. Understanding Women's Perspectives on Dating Scan: Knowledge, Attitudes, and Behaviors. *Esculapio - JSIMS* 2024;20(03): 432-437

DOI: <https://doi.org/10.51273/esc24.251320327>

Introduction

Advancements in medical technology have significantly transformed the landscape of prenatal care, offering a window into the early stages of fetal development that was previously inaccessible. One of the pivotal innovations in this domain is the dating scan, a non-invasive imaging technique that provides crucial insights

into the well-being of developing fetus during the earliest stages of pregnancy.¹ The first trimester, spanning from conception to the 14th week of gestation, marks a vital period characterized by rapid embryonic growth and organogenesis.² The utilization of dating scan has become a routine component of contemporary prenatal care in many parts of the world. World Health Organization (WHO) aims that every pregnant woman gets comprehensive and quality antenatal care services and recommends at least four contact sessions throughout pregnancy with one in the first trimester.³ It is done for many indications which include confirmation of intrauterine pregnancy and cardiac activity, to rule out ectopic pregnancy, accurate dating of pregnancy, confirmation of congenital anomalies, number of fetuses determination, evaluation of multiple pregnancy by establishing chorionicity, establishment of causes rela-

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Submission Date: 02-06-2024

1st Revision Date: 27-07-2024

Acceptance Date: 05-09-2024

ted with early pregnancy bleeding and evaluation of suspected gestational trophoblastic disease.⁴ It is evidence based that first trimester measurement of crown rump length is more reliable than a certain menstrual date in calculating duration of pregnancy and thus unnecessary inductions for presumed prolonged pregnancy may be reduced.⁵ Early pregnancy ultrasound can detect up to 63% of congenital anomalies that is helpful for the parents to decide termination of pregnancy at early gestational age.⁶

Despite its clinical advantages, the perception and decision-making processes that underlie the uptake of dating scan among women of reproductive age are influenced by a myriad of factors, including cultural beliefs, socioeconomic status, access to healthcare, and individual preferences.⁷ It has been observed that education level is playing a pivotal role in creating awareness among expectant mothers.⁸ Globally, there is wide variation of antenatal coverage between and within countries. Factors associated with high antenatal coverage being, urban residence, more education and wealthier status.⁹ The rationale of current study is to determine the awareness, attitude and practices among females of reproductive age about the importance of dating scan which will be a step towards behavior change. The results will highlight the importance of early non-invasive screening among the females of reproductive ages.

Material and Methods

A cross sectional study was carried out in the Out-Patient Department of Obstetrics & Gynecology at Central Park Teaching Hospital from November 2021 to April 2022 for assessment of knowledge, attitude and practices regarding dating scan in young females. A total of 400 married women of reproductive age with age range of 15 to 45 years were recruited in this study. Sample size of 400 was computed using WHO sample size calculator by assuming prevalence of first trimester scan at 56 percent with confidence interval of 95% and margin of error at 5%.¹⁰ As per of Helsinki Declaration, ethical letter was obtained from institutional review board of Central Park Medical College & Teaching Hospital Lahore with IRB number as CPMC/IRB-No/1276 dated 28-04-2021 and prior written informed consent was obtained from all study participants. Study participants were recruited by non-random convenient sampling technique. The nulliparous women and the women who were infertile were excluded.

A structured questionnaire was used to collect demographic data and for assessment of knowledge and practice pertaining to dating scan. In this questionnaire, questions about importance and practical appliance of scan because of accurate dating, ectopic pregnancy, number of fetuses, fetal viability, early pregnancy bleeding, fetal anomalies and for down syndrome were asked. Before administration to whole cohort, a pilot was conducted on 20 participants and was validated with alpha Cronbach of 0.9. Once the data collected it was compiled and analyzed by SPSS version 26.0 and was dully compared for errors and omissions. For quantitative variables mean and standard deviation was calculated. The relationship between the categorical variables were determined by chi-square test by keeping the p value ≤ 0.05 with 95% confidence interval and power of study kept at 80%.

Results

The data was collected from 400 females of reproductive age with mean age of 32.09 + 6.96 years. Approximately half of the females had monthly family income of Rs 25000 PKR or more. Out of all 103 (25.8%) of the females were illiterate. More than three-fourth of the females owned the houses. About 59.3% of the females lives in extended family. The most common occupation of the spouse 95(23.8%) was daily wages. Around 324(81.0%) of the females were housewives. **(Table1)**. In our study, majority of participant had knowledge about the importance of dating scan in assessment of fetal viability 73.8% (n=295) followed by number of fetuses 70.0% (n=280) as explained in **(Table2)**. While least of study participants had knowledge of screening of down syndrome through measuring nuchal translucency i.e. 10.2% (n=41), other knowledge parameters were also poorly known by study population as explained in **(table 2)**.

It was observed that a large number of females will opt for antenatal visit during first trimester. More than half said that they keep the ultrasound scan done during first trimester safe for reference. Around more than one-third of the females said that dating scan should be done by consultant obstetrician followed by 35.0% of the females who said MBBS doctor. Nearly three-fourth of the females do not get information regarding benefits of dating scan. Among those who get the information, around 14.2% of the females said that the source of information was doctor followed by internet with 3.3%. About 62.8% of the females said that they recommend

Table 1: Baseline characteristics of the respondents

Factors	Categories	N	%
Education	Illiterate	103	25.8%
	Primary	48	12.0%
	Middle	40	10.0%
	Matric	52	13.0%
	Intermediate	59	14.8%
	Graduate	55	13.8%
	Postgraduate	39	9.8%
	Hafiz Quran	04	1.0%
Spouse Education	Illiterate	87	21.8%
	Primary	32	8.0%
	Middle	42	10.5%
	Matric	71	17.8%
	Intermediate	47	11.8%
	Graduate	60	15.0%
	Postgraduate	59	14.8%
	Hafiz Quran	02	0.5%
Monthly Family Income	Nil	06	1.5%
	Less than 25000 PKR	195	48.8%
	>= 25000 PKR	199	49.8%
House	Rented	85	21.2%
	Owned	315	78.8%
Type of Family	Nuclear	163	40.8%
	Extended	237	59.3%
Occupation	Housewife	324	81.0%
	Daily wages	14	3.5%
	Field worker	03	0.8%
	Bhatta worker	01	0.3%
	Teacher	27	6.8%
	Staff Nurse	05	1.3%
	Medical/ Allied	13	3.3%
	Office worker	06	1.5%
	Entrepreneur	07	1.8%

dating scan (Table 3).

Table 3 indicates the attitudes, practice and purpose of dating scan. Half of the females said that they had ultrasound in all pregnancies. About 23.6% of the females said that they never had dating scan in any pregnancy. The most common purpose of dating scan was fetal viability followed by to know the number of fetuses. The least common purpose was measuring nuchal translucency.

Discussion

Our study represented wide variation in the study population in terms of age, parity, education and socioeconomic status. The current study targeted the women of reproductive age (15-45 years) who were either currently pregnant or had undergone the experience of pregnancy. We examined their knowledge, attitude and practices regarding dating scan.

Regardless of their level of education or socioeconomic standing, approximately three-fourths of the study population knew something about dating scan. More advanced details were related to higher education. Early pregnancy ultrasonography offers crucial details about the gestational age, congenital abnormalities, and the number of fetuses that may influence the antenatal care strategy. In our study, fetal viability was the most well-known of the early pregnancy ultrasound's several components. About 73.8% of women were aware that a first-trimester ultrasound is used to determine the viability of the fetus. In their study of women's knowledge, Mubuke Aloysius Gonzaga et al. demonstrated that almost all women, regardless of education level, were aware that ultrasound is used to determine fetal viability.⁷

Table 2: Knowledge of the respondents about dating scan

Knowledge Parameters	%, (n) n=400		p-value
	Yes	No	
Do you know? Dating scan provides more accurate dating of pregnancy than menstrual date.	39.8%, (159)	60.3%, (241)	0.000*
Do you know? Dating scan can detect ectopic pregnancy early.	49.0%, (196)	51.0%, (204)	0.000*
Do you know? Dating scan can detect number of fetuses.	70.0%, (280)	30.0%, (120)	0.000*
Do you know? In case of multiple pregnancies, ultrasound being done during first trimester may provide valuable information that help in further management plan of pregnancy.	31.8%, (127)	68.3%, (273)	0.000*
Do you know? Dating scan detects fetal viability.	73.8%, (295)	26.3%, (105)	0.000*
Do you know? Dating scan helps detect cause of early pregnancy bleeding like miscarriages and hydatidiform mole.	30.8%, (123)	69.3%, (277)	0.000*
Do you know? Dating scan can detect some fetal congenital anomalies.	34.3%, (137)	65.8%, (263)	0.000*
Do you know? First trimester scan can screen for Down's syndrome.	10.2%, (41)	89.8% (359)	0.002*

Table 3: Attitude and Practice Trends of the respondents about dating scan

Attitude	Response	N	%
In your opinion, would you opt for antenatal visit and ultrasound during first trimester?	No	69	17.3%
	Yes	331	82.8%
In your opinion, dating scan should be kept safe for future reference for example dating the pregnancy.	No	171	42.8%
	Yes	229	57.2%
In your opinion, dating scan should be done by	Midwife	41	10.2%
	MBBS doctor	140	35.0%
	Consultant Obstetrician	135	33.8%
	Sonologist	84	21.0%
Do you try to get information regarding benefits of dating scan?	No	305	76.2%
	Yes	95	23.8%
If you try to get information, then the source of information is?	No one	306	76.5%
	Friend	10	2.5%
	Neighborhood	11	2.8%
	LHV	02	0.5%
	Doctor	57	14.2%
	Internet	13	3.3%
	Other	01	0.3%
Do you recommend others to have dating scan?	No	149	37.2%
	Yes	251	62.8%
Practice			
Based on your previous experience, did you have dating scan in?	Never	94	23.6%
	All pregnancies	200	50.0%
	First pregnancy	33	8.3%
	Second pregnancy	18	4.5%
	Current pregnancy	55	13.8%
what was the purpose of getting your dating scan? fetal viability	No	106	26.5%
	Yes	294	73.5%
what was the purpose of getting your dating scan? number of fetuses	No	246	61.5%
	Yes	154	38.5%
what was the purpose of getting your dating scan? early pregnancy complications	No	293	73.3%
	Yes	106	26.5%
what was the purpose of getting your dating scan? fetal anomalies	No	308	77.0%
	Yes	92	23.0%
what was the purpose of getting your dating scan? measure nuchal translucency	No	384	96.0%
	Yes	16	4.0%
what was the purpose of getting your dating scan? see my baby	No	277	69.2%
	Yes	123	30.8%

An important piece of information about the location of the pregnancy can be gleaned from an early ultrasound. 2.7% of maternal deaths resulting from pregnancy are attributed to ectopic pregnancies.¹¹ Only 49% of women in our study were aware that an ectopic pregnancy could occur and that an ultrasound can pinpoint the pregnancy's location. The incidence of multiple pregnancy is increasing. An early pregnancy ultrasound is crucial for determining the number of fetuses and chronicity in order to plan for antenatal care in the event of monochorionicity and for preventing complications.¹²

In our study, 70% of women knew that early pregnancy ultrasound can detect number of fetuses but only 31.8% of them was aware of the significance of chorionicity and sought out a professional for a comprehensive ultrasound. When determining duration of pregnancy and expected date of delivery, early pregnancy ultrasound is more accurate than menstrual date.¹³ Duration of pregnancy calculated by early pregnancy ultrasound as opposed to menstrual date can reduce the incidence of induction of labour for post term pregnancies.¹⁴ Just 39.8% of the ladies in our research were aware of this fact. Only 57% of the women who received early ultrasounds preserved the images for future use. Chan L. et. al demonstrated this knowledge in 50% of women.¹⁵ An early scan performed at 12–13 weeks' gestation by a skilled sonographer can discover approximately 50% of structural anomalies that are prenatally detectable and 100% of those that are anticipated to be detected at this stage. These include neural tube defects, omphalocele and severe skeletal anomalies.¹⁶ In our study, only 34% of women knew that dating scan can detect structural abnormalities and all these women either belonged to health care profession or had higher education. Chen L. et.al described similar findings in his study done on Chinese population, where 35% women knew early pregnancy ultrasound can detect structural anomalies (neural tube defects).¹⁵ In Ethiopia to get an Ultrasound scan done for the purpose of detecting congenital abnormalities was the least common reason identified.¹⁷ A suitable and non-invasive method to check for chromosomal abnormalities is to assess the nuchal translucency during an early prenatal ultrasound between 10 and 13 weeks of pregnancy.¹⁸ Only 10.2% of the women in the current study were aware that Down's syndrome can be detected during an early pregnancy ultrasound, and of those, only 4% asked to have their nuchal translucency measured. In her study on the awareness of prenatal

diagnosis, Ayesha Isani found that just 22% of the study community was aware about Down's syndrome and its screening¹⁹. Chen L et.al demonstrated this knowledge in 43% of study population.¹⁵ Early detection and treatment of molar pregnancy can lead to improved maternal outcome²⁰. In our study, only 30 % of the respondents knew the fact that molar pregnancy can be detected on early trimester ultrasound.

For structural anomalies and aneuploidy screening, sonologists need training and a learning curve.²¹ Early pregnancy ultrasounds, when carried out by a skilled sonologist, can offer complex information on nuchal translucency and structural anomalies, which aids parents in their decision to terminate the pregnancy at an early gestation. Only 21% of the participants in our study chose a sonologist for their dating scan. The majority of the ladies believed that an MBBS doctor or consultant gynaecologist was qualified enough to do this ultrasonography. 10% of respondents felt a midwife could perform it. These women were all uneducated and older than 40. In our study, 23.6% of women never had dating scan. These were the women who did not receive formal education, their age range was between 40-45 years and their last child birth was in the last 18 years. These were the women according to them this ultrasound was not important to perform that is why they never went for this. Contrary to this, around 70% had their dating scan done and more than 90% acknowledged its importance. Out of these women, 13.8% were currently pregnant and 50% had their last child birth within 5 years. These were the women who received formal education from matriculation to postgraduation. According to the Pakistan Demographic and Health Survey, first trimester prenatal coverage was at 55% in 2017–18 and 15% in 1990–19, respectively.²² This demonstrates a 27-year increase of 40% in the number of first-trimester visits. This shows how attitudes and behaviours can change throughout time. In Mubuuke et.al study 83% of women had positive attitude towards dating scan⁷. Priyanka Dhiya et al depicted 83% acceptability of first trimester screening.²³ Munim S et.al depicted around 93% women knowing ultrasound is an important investigation but did not exactly knew the exact timing to have one.²⁴ In a multicenter study done in Ethiopia, 38% had ultrasound on their own request while 40% had on the request of their health care provider.²⁵

Conclusion

The majority of participants had significantly adequate knowledge regarding importance of dating scan for the detection of fetal viability and number of fetuses but the practice was significantly inadequate. Moreover, significantly inadequate knowledge and practice was observed regarding getting it done for calculating accurate dating, detection of hydatidiform mole, congenital abnormalities and screening for Down's syndrome through nuchal translucency. There is need to enhance the knowledge regarding importance of dating scan among the expectant mothers in which the health care professionals, seminars and the social and print media can play a vital role.

Conflict of Interest: *None*

Funding Source: *None*

References

1. Van den Hof MC, Smithies M, Nevo O, Oullet A. No. 375-Clinical Practice Guideline on the Use of Dating scan. J Obstet Gynaecol Canada. 2019;41(3):388–95. Available from: <https://doi.org/10.1016/j.jogc.2018.09.020>
2. Kenny LC, Myers JE. Ten Teachers Obstetrics 20th Edition. 2017. 169–219 p.
3. Sataloff RT, Johns MM, Kost KM. WHO recommendations on antenatal care for a positive pregnancy experience.
4. Control Q. AIUM-ACR-ACOG-SMFM-SRU Practice Parameter for the Performance of Standard Diagnostic Obstetric Ultrasound Examinations. J Ultrasound Med. 2018;37(11):E13–24.
5. June R. Guideline No. 23. 2004.
6. Kenkhuis MJA, Bakker M, Bardi F, Fontanella F, Bakker MK, Fleurke-Rozema JH, Bilardo CM. Effectiveness of 12-13-week scan for early diagnosis of fetal congenital anomalies in the cell-free DNA era. Ultrasound Obstet Gynecol. 2018 Apr;51(4):463-69. doi:10.1002/uog.17487.
7. Chimatiro CS, Hajison P, Chipeta E, Muula AS. Understanding barriers preventing pregnant women from starting antenatal clinic in the first trimester of pregnancy in Ntcheu District-Malawi. Reprod Health. 2018 Sep 21;15(1):158. doi: 10.1186/s12978-018-0605-5.
8. Gonzaga MA, Kiguli-Malwadde E, Francis B, Rosemary B. Current knowledge, attitudes and practices of expectant women toward routine sonography in pregnancy at Naguru health centre, Uganda. Pan Afr Med J. 2009 Nov 30;3:18.

9. Arroyave L, Saad GE, Victora CG, Barros AJD. Inequalities in antenatal care coverage and quality: an analysis from 63 low and middle-income countries using the ANCq content-qualified coverage indicator. *Int J Equity Health*. 2021 Apr 17;20(1):102. doi: 10.1186/s12939-021-01440-3.
10. Samrah H, Hazarika B. importance of the size of sample and its determination in the context of data related to the schools of greater Guwahati. *gauhati Univ Math Assoc*. 2012;12(january):55–76.
11. Hendriks E, Rosenberg R, Prine L. Ectopic Pregnancy: Diagnosis and Management. *Am Fam Physician*. 2020 May 15;101(10):599-606. PMID: 32412215.
12. Berceanu C, Mehedințu C, Berceanu S, Voicu NL, Brătilă E, Istrate-Ofițeru AM, Navolan DB, Niculescu M, Szasz FA, Căpitănescu RG, Văduva CC. Morphological and ultrasound findings in multiple pregnancy placentation. *Rom J Morphol Embryol*. 2018; 59(2): 435-3.
13. Majola L, Budhram S, Govender V, Naidoo M, Godlwana Z, Lombard C, Moodley D. Reliability of last menstrual period recall, an early ultrasound and a Smartphone App in predicting date of delivery and classification of preterm and post-term births. *BMC Pregnancy Childbirth*. 2021 Jul 7;21(1):493. doi: 10.1186/s12884-021-03980-6.
14. Tun M, Tuohy J. Rate of postdates induction using first-trimester ultrasound to determine estimated due date: Wellington Regional Hospital audit. *Aust N Z J Obstet Gynaecol*. 2011 Jun;51(3):216-9. doi: 10.1111/j.1479-828X.2010.01279.x.
15. Chan LW, Chan OK, Chau MC, Sahota DS, Leung TY, Fung TY, Lau TK. Expectation and knowledge of pregnant women undergoing first and second trimester ultrasound examination in a Chinese population. *Prenat Diagn*. 2008 Aug;28(8):739-44. doi: 10.1002/pd.2050. PMID: 18567061.
16. Ungureanu DR, Drăgușin RC, Căpitănescu RG, Zorilă L, Ofițeru AMI, Marinaș C et al. Dating scan Detection of Fetal Central Nervous System Anomalies. *Brain Sci*. 2023 Jan 9;13(1):118. doi: 10.3390/brainsci13010118.
17. Molla W, Mengistu N, Wudneh A. Pregnant women's knowledge, attitude, and associated factors toward obstetric ultrasound in public hospitals, Ethiopia, 2021: Multi-centered cross-sectional study. *Womens Health (Lond)*. 2022 Jan-Dec;18:17455057221091357. doi: 10.1177/17455057221091357.
18. Kagan KO, Sonek J, Kozłowski P. Antenatal screening for chromosomal abnormalities. *Arch Gynecol Obstet*. 2022 Apr;305(4):825-35. doi: 10.1007/s00404-022-06477-5.
19. Majeed AI, Gul SS. ultrasound scanning and prenatal diagnosis: its knowledge and cognisance in pregnant women of islamabad. *Ann PIMS*. 2017; 13(1): 108–10.
20. Babar K, Rathore S, Arshad M, Niazi S, Mahmood N, Chughtai AS. Geographical, Clinical and Morphological Features of Molar Pregnancy in Pakistan. *Esculapio - JSIMS* 2022;18(03):329-335
21. Cuckle H, Platt LD, Thornburg LL, Bromley B, Fuchs K, Abuhamad A et al. Nuchal Translucency Quality Review Program of the Perinatal Quality Foundation. Nuchal Translucency Quality Review (NTQR) program: first one and half million results. *Ultrasound Obstet Gynecol*. 2015 Feb;45(2):199-204. doi: 10.1002/uog.13390.
22. National Institute of Population Studies (NIPS), ICF. Pakistan Demographic and Health Survey 2017-2018 [Internet]. 2019. 573 p. Available from: <https://www.dhsprogram.com/pubs/pdf/FR354/FR354.pdf>
23. Dahiya P, Dahiya V, Beniwal A. Acceptance and Utility of Combined Screening for Aneuploidies in First Trimester of General Population of North India. 2020; 10(July):203–6.
24. Munim S, Khawaja NA, Qureshi R. Knowledge and awareness of pregnant women about ultrasound scanning and prenatal diagnosis. *J Pak Med Assoc*. 2004;54(11):553–5.
25. Molla W, Mengistu N, Wudneh A. Pregnant women's knowledge, attitude, and associated factors toward obstetric ultrasound in public hospitals, Ethiopia, 2021: Multi-centered cross-sectional study. *Womens Health (Lond)*. 2022 Jan-Dec;18:17455057221091357. doi: 10.1177/17455057221091357. PMID: 35430932; PMCID: PMC9019315.

Authors Contribution

NS, HA: Conceptualization of Project

NS: Data Collection

NS: Literature Search

HA, NS: Statistical Analysis

NS, HA: Drafting, Revision

NS: Writing of Manuscript