
Prenatal Diagnosis In Low Resource Setting: Is It Acceptable?

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Abstract

Objective: This study aimed to explore knowledge and acceptability of prenatal procedures both non invasive prenatal screening tests and invasive procedures among Egyptian women in child bearing age and to assess their attitude towards such procedures. Also to examine confounding factors affecting women's attitude towards prenatal procedures.

Study design:

A cross-sectional study on a representative sample of women in childbearing age attending Obstetrics & Gynecology outpatient clinic at Mansoura University Hospital, Egypt. An anonymous questionnaire was supplemented by voluntary interviewers for women in childbearing age.

Results:

465 women were included in the study. The mean age \pm SD was 27 ± 6 years. About 44% of women were knowledgeable about non invasive prenatal screening procedure and only 25.5% heard about invasive prenatal procedures. 88.8% express positive attitude regarding performance of the screening tests. Forty one percent of the group agreed to perform invasive prenatal procedures during their pregnancy. Educational level and family history of congenital anomalies significantly affected attitudes towards testing during future pregnancy. The cost of procedure affected the decision to perform it in 56.7% of women.

Conclusion:

Egyptian women express positive attitude towards non invasive prenatal screening but showed poor knowledge. Their attitude towards invasive procedure is guarded by the risk of abortion. Education and family history of fetal anomalies are the factors that affect attitudes. The cost of the prenatal test affects the decision made by the women to participate in testing.

Key words: prenatal procedures, attitudes, knowledge, pregnancy termination.

Introduction

Prenatal screening was first introduced nearly four decades ago, yet gaps still exist in public knowledge about the screening program (1). Prenatal screening procedures are options available to women in both, the first (11-13 weeks) and second (14-18 weeks) trimesters of pregnancy, aimed at identifying those at increased risk of birth defects and/or hereditary conditions, such as Down syndrome, neural tube defects (NTD) and some other fetal anomalies. Diagnostic procedures are invasive tests that carry a risk of miscarriage and can confirm, with 99% accuracy, the presence of a chromosomal abnormality (2).

The general population is familiar with Down syndrome (trisomy 21), but they are not aware of more uncommon conditions such as Patau syndrome (trisomy 13) and Edward's syndrome (trisomy 18). They are aware of diagnostic testing from friends, TV/press, or because of family history (1). Recent guidelines from the American College of Obstetricians and Gynecologists, and the American Society of Medical Genetics recommend that all pregnant women have to be offered prenatal screening for the most common aneuploidies (3). No simple correlation has been found between the change in technology to the changes in values and beliefs towards genetic testing and prenatal procedures. Some think that genetic testing is a great advance while others think it will cause troubles (4).

The availability of information about prenatal screening and diagnostic procedures affects the choice of women of whether or not to undergo testing (5). Limited information is available on how knowledge of prenatal screening, education level and former experience of disability affect the decision to participate in prenatal screening (6).

Some modern Islamic opinion and rulings have accepted prenatal diagnosis and approved severe congenital anomalies and malformations, per se, as a reason for termination of pregnancy before ensoulment (7, 8).

This study aimed to explore knowledge, attitude, and acceptability of prenatal procedures (non invasive prenatal screening tests and invasive procedures) among Egyptian women in child-bearing age and to examine confounding factors affecting women attitude towards prenatal procedures.

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Patients and Methods

A cross-sectional study on a representative sample of women attending Obstetrics and Gynecology outpatient clinic in Mansoura University Hospital between January 2011 and April 2011.

An anonymous questionnaire was supplemented by voluntary interviewers for the women in childbearing age after their consent to participate in the study. The structured questionnaire included information about the socioeconomic variables and risk factors for fetal anomalies (maternal diseases, personal or family history of a child with anomalies).

The questionnaire included items about knowledge and attitude towards non invasive prenatal screening (18 items) and invasive prenatal diagnostic procedure (8 items).

Statistical analysis:

Statistical analysis was carried out using the statistical package SPSS 16.0 for Windows (SPSS, Chicago, IL, USA). The means and standard deviations (SD) were calculated for continuous variables. An independent sample t-test was used to evaluate the associations between continuous variables. Two-sided p-value was considered statistically significant at $p < 0.005$.

Results

A total of 465 women of child bearing age were interviewed during the period from January 2011 to April 2011. Table (1) represents demographic data of the studied population, where mean age \pm SD was 27 ± 6 years and 8 % of the women were ≥ 35 years. Eight percent of the studied women had previous history of infertility and 11.4 % had history of congenital anomalies either in their sibling or their family (table 2). About 44 % of women were knowledgeable about non invasive prenatal screening procedure and 88.8 % express positive attitude regarding performance of the tests (table 3).

Forty one percent of the group agreed to perform invasive prenatal procedures during their pregnancy. This figure declined to 31.6 % after explaining the procedure related risk of miscarriage (table 4). Only 25.5 % of women heard about invasive prenatal procedures.

Nineteen percent of the interviewed women chose to terminate pregnancy after positive screening test results and 90 % refused, while 72.6 % of them chose termination if there is evident fetal anomaly that may result in handicapping. This decision was influenced by educational level and history of congenital anomalies (p value = .001 and .000 respectively). Presence of maternal disease, infertility, previous abortions and occupation didn't significantly affect women decision to terminate an affected pregnancy. The cost of the prenatal procedure affected the decision of performing it by 56.7% of the women, whereas in 43.3%, the cost did not affect their decisions.

When we studied the factors that may influence knowledge and attitude towards prenatal procedures, we found that higher education, employed and urban women were more knowledgeable (tables 5&7) whereas maternal ages, number of pregnancies, presence of congenital anomalies didn't, significantly, affect women's knowledge.

Urban women accepted the idea of prenatal procedures more than women living in rural areas (table 6). Education significantly affected women attitude towards non invasive tests, while

no significant difference in attitude was found towards invasive procedure between educated and non educated women. Presence of congenital anomalies either in their families or previous child significantly affected women's attitude to undergo prenatal procedure in their future pregnancy (100 %, $p = 0.001$).

Discussion

Women favor prenatal examinations, but the choice of participation does not seem to be based on insight to enable fully informed consent. More than 90% of the pregnant women expressed a positive attitude toward screening procedures in pregnancy. About 96 % were found knowledgeable about the procedural and practical aspects (9).

Unfortunately, the present study showed that all surveyed women had positive attitudes, but poor knowledge about prenatal screening. About 88% of the studied group accepted prenatal screening and 87% found it valuable for the outcome of pregnancy. Knowledge about prenatal screening was found in 43.4 % to 48.3 % of the studied group, whereas only 25.5 % were found knowledgeable about invasive procedures.

Forty one percent of the studied group accepted to perform invasive prenatal diagnosis but this declined to 31.6 % after explaining the risk of miscarriage. Willruth et al reported a higher acceptance, where only 21.5 % of his surveyed group refused the procedures (10).

Factors such as education, maternal age, and religion affect the acceptability of prenatal diagnosis. In our study educational level significantly influence women knowledge and their acceptance of prenatal screening but doesn't affect their acceptance of invasive procedures. Brajenovic et al reported a statistically significant difference in knowledge scores with respect to educational level. In contrast, no difference regarding their attitudes toward amniocentesis (11). Julian-Reynier et al. reported that, educational level had no effect on acceptance of invasive diagnostic procedures (12).

Regarding residence we found women living in urban areas more knowledgeable and expressed positive attitude toward prenatal procedures than women living in rural areas. This difference may be explained by a higher educational level and the more availability of medical services in urban areas (13).

In our study employment significantly affect knowledge about prenatal procedures and this may be attributed to higher educational level.

Although Rostant et al found an association between increasing women age and number of pregnancies with knowledge and attitude toward prenatal tests (14), our study found those variables not significantly affecting both knowledge and attitude.

One of the important factors that may influence knowledge and attitude toward prenatal tests was history of congenital anomalies. Such women expressed positive attitude (100 %) to perform testing in their future pregnancy, although they have poor knowledge. these findings were reported by different authors (15, 8) .

In different countries, prenatal care is free of charge and a part of general health care. However, there is a fee for first trimester prenatal screening as this is considered an optional service (6). In our hospital only ultrasonic prenatal screening is free of charge and when discussing the cost of biochemical markers and invasive procedure with the interviewed women 56.7% found the procedures expensive and their cost affect the decision to perform them during pregnancy.

Acceptance of termination of pregnancy for severe clinical conditions was comparable to that reported from European countries

(72.6 %) (16). In our study, this decision was significantly affected by educational level and history of congenital anomalies. Japer et al (2000) reported high level of opposition to termination of pregnancy in the event of severely affected fetus (61.8 %) but he found educated women willing pregnancy termination more than less educated if they faced an affected fetus (17). The majority of our groups were Muslim and this doesn't influence their attitude towards pregnancy termination for severe fetal anomaly.

Table (1):
Demographic data of the study group

	Number (465)	Percentage (%)
Age (years)		
Mean \pm SD	27 \pm 6	8 %
≥ 35 years	37	
Occupation		
Employed	188	40.4 %
Not employed	277	59.6 %
Education		
Not educated	87	18.7 %
1ry & 2ry school	184	39.5 %
Higher	194	41.7 %
Residence		
Urban	192	41.3 %
Rural	273	58.7 %
Religion		
Muslim	434	93.3 %
Christian	31	6.7 %
Consanguinity		
Present	61	13.1 %
Absent	404	86.9 %

Table (2):
Obstetric and medical history of the participants

	Number	Percentage
Previous infertility		
Present	37	8 %
Absent	428	92 %
Abortions		
Present	153	32.9 %
Absent	312	67.1 %
Congenital anomalies		
Present	53	11.4 %
Absent	412	88.6 %
Maternal disease		
Present	81	17.4 %
Absent	384	82.6 %

Table (3):
Knowledge & attitude towards non invasive procedures

	Biochemical markers		Ultrasonic diagnosis	
Knowledge				
Yes	202	(43.44%)	225	(48.38 %)
No	263	(56.56%)	240	(51.62 %)
Agree to perform				
Yes	367	(78.92%)	413	(88.81%)
No	98	(21.08%)	52	(11.19%)
Valuable				
Yes	364	(78.28%)	405	(87.09%)
No	101	(21.72%)	60	(12.91 %)

Table (4):
Knowledge & attitude towards Invasive diagnostic procedures

	Number	Percentage
Knowledge		
Yes	119	25.59 %
No	346	74.41 %
Agree to perform		
Yes	192	41.29 %
No	273	58.71 %
Carry risk (agree)		
Yes	147	31.61 %
No	318	68.39 %

Table (5):
Effect of occupation on knowledge

	Biochemical markers		US procedures		Invasive procedures	
	Yes	No	Yes	No	Yes	No
Employed (188)	102	86	130	58	87	91
Not employed (277)	100	177	95	182	66	211
Total	202	263	225	240	153	312
P value	.000		.001		.003	

Table (6):
Effect of residence on attitude

	Biochemical markers		US procedures		Invasive procedures	
	Yes	No	Yes	No	Yes	No
Urban (192)	103	86	131	58	88	91
Rural (273)	101	177	96	182	67	211
Total	203	263	226	240	154	312
P value	.000		.001		.003	

Table (7):
Effect of education on knowledge

	Biochemical markers		US procedures		Invasive procedures	
	Yes	No	Yes	No	Yes	No
Non-educated (87)	17	70	13	80	10	77
Lower education (184)	67	117	70	114	49	135
Higher education (194)	118	76	142	52	94	100
P value	.000		.001		.000	

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