

The Knowledge and Attitudes of Thai Obstetrics and Gynaecology Residents Towards Down Syndrome Screening

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Objective: To survey the knowledge and attitudes towards Down syndrome screening in the final year of training of Thai obstetrics and gynaecology residents.

Material and Method: A self-administered structured questionnaire of knowledge and attitudes towards Down syndrome screening was developed. One hundred thirty six residents were asked to respond to the questionnaire on their last day of the Thai board examination in the year 2006 and 2007. The data was analyzed using SPSS for windows version 15.0.

Results: Eighty-two completed questionnaires surveys were returned (60% response rate). The mean total score of knowledge of Down syndrome and its screening test was 81%. Eighty percent of respondents (65/82) had positive attitudes towards counseling for screening Down syndrome for all pregnant women. Fifty-four percent (44/82) had negative attitudes towards Down syndrome screening for all pregnant women. Sixty percent (49/82) favored nuchal translucency measurement by ultrasonography for screening in the first trimester. Training institutes, age, sex, and the counseling experience of residents did not affect the attitudes.

Conclusion: The final-year Thai Obstetrics and Gynaecology residents had good knowledge and positive attitudes towards Down syndrome screening. More than half of the residents had negative attitudes towards the screening of all pregnant women. Educational programs and training are needed to address these deficiencies before screening programs are widely implemented.

Keywords: Knowledge, Attitudes, Down syndrome, Screening, Obstetrics and gynaecology residents

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Prenatal diagnosis for chromosomal anomalies was first introduced in the 1970s, and was initially restricted to an invasive procedure in the second trimester, based on maternal age. An invasive amniocentesis diagnosis of Down syndrome (DS) is offered with the detection rate of 20 to 30%⁽¹⁾. New developments in maternal serum biochemistry⁽²⁾ and ultrasound screening⁽³⁾ have made it possible to offer all pregnant women a non-invasive screening test to assess an individual risk of having a fetus with aneuploidy to determine whether invasive prenatal diagnostic testing is necessary. From Morris and Alberman study⁽⁴⁾, between 1989 and 2008 among mothers aged 37 years and older, a consistent 70% of affected pregnancies were diagnosed antenatally.

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In younger mothers, the proportion of pregnancies diagnosed antenatally increased from 3% to 43% owing to improvements in the availability and sensitivity of screening tests. Good screening tests lead to a decline in invasive procedures performed in advanced maternal age with low risk, therefore decreased loss of euploid fetus, and an increase in the detection rate in younger mothers with high risk. In Thailand, about 1,000 cases of DS are delivered per year, and mostly occur in the maternal age group less than 35 years old. As more genetic screening tests will be offered as a part of routine obstetric practice, it is essential that graduating clinicians are well qualified in knowledge and attitudes to counsel on these issues. To the best of the authors' knowledge, there has been no study regarding knowledge and attitudes towards DS screening in Thai Obstetricians. Therefore, the present study aims to assess the knowledge and attitudes towards Down syndrome screening in the final year of training of Thai Obstetrics Gynaecology residents.

Material and Method

The present study had been approved by the Ethics Committee of the Faculty of Medicine, Prince of Songkla University. The self-administered structure questionnaire, which had been modified from Clearly-Goldman et al⁽⁵⁾, was developed and validated by two authors (O.K. and C.S.), Maternal Fetal Medicine staff experts in the Department of Obstetrics and Gynaecology. This one-year period study's questionnaires were assigned to 136 residents in their last day of the Thai board examination, in 2006 and 2007 academic years. Exclusion criteria included residents who did not respond and any incomplete questionnaire. The questionnaire consisted of a 32-item form, separated into three sections. The first section asked for demographic information (9 items), the second evaluated the knowledge of DS and its screening tests (11 items), and the last assessed attitudes towards DS screening tests (12 items).

Using Cronbach's alpha statistic, the reliability of the attitudes questionnaire was calculated as 0.84. The factors affecting attitudes included training institutes (complete vs. incomplete genetics testing facility), counseling patients per month (less than 10 patients vs. more than or equal to 10 patients per month), age (less than 30 years old vs. more than or equal to 30 years old), and sex (female vs. male) were analyzed. Data was expressed as a percentage and a mean with standard deviation. Descriptive statistics and univariate analysis were performed by SPSS for windows version 15.0. Statistical significance was set at $p < 0.05$.

Results

Demographic characteristics of the 82 respondents are shown in Table 1. More than half of the residents were female (53/82), mostly trained in the institutes with a complete genetic testing facility. Most residents had little experience in counseling patients. The mean knowledge score of DS was four out of five (80%). The question that most residents could not answer was the incidence of DS fetuses at the maternal age of 35 years old (Table 2). The mean knowledge scores of DS screening tests were five out of six (83.33%). The question that most respondents could not answer was using maternal age more than or equal to 35 years as Down syndrome screening had a detection rate of 20 to 30% (Table 3).

Eighty percent of residents (65/82) had a positive attitude towards counseling Down syndrome screening for all pregnant women (Fig. 1). However, more than half of the residents (54%) had a negative

Table 1. Demographic characteristics of respondents (n = 82)

	Percent
Mean age (years) (mean±SD)	29.0±2.2
Sex	
Female	63.0
Male	37.0
Training institute	
Complete genetics testing facility	78.0
Incomplete genetics testing facility	22.0
Counseling patients/month	
Less than 10 patients	62.0
More than or equal to 10 patients	38.0
Race	
Thai	98.8
Chinese	1.2
Religions	
Buddhist	100

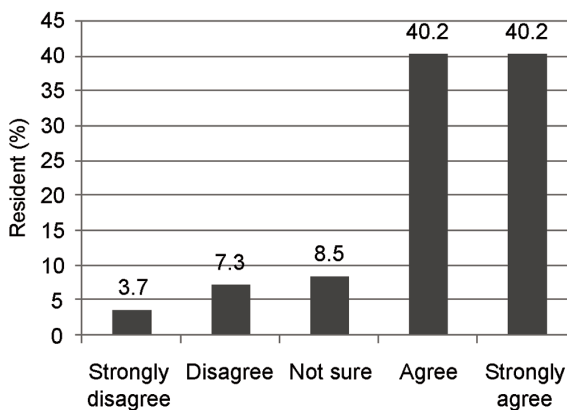


Fig. 1 Attitude towards counseling of DS screening test for all pregnant women.

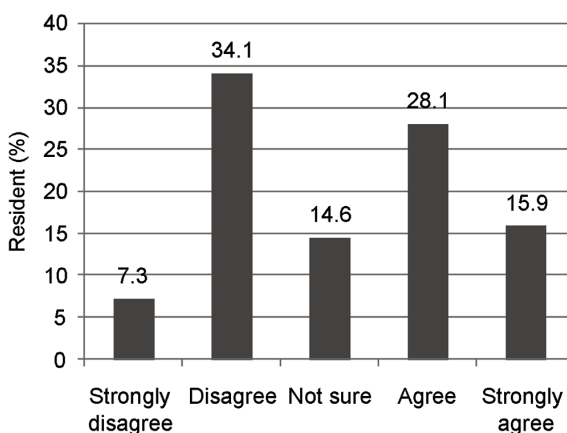


Fig. 2 Attitude towards DS screening tests for all pregnant women

Table 2. Knowledge of Down syndrome (n = 82)

Knowledge	True (%)	False (%)
1. Down syndrome is autosomal trisomy 21 in most cases	97.6	2.4
2. Down syndrome is the most common genetic chromosome abnormality in Thailand	74.4	25.6
3. Incidence of Down syndrome fetuses at maternal age 35 years old is approximately 1:300	47.6	52.4
4. Invasive prenatal diagnosis of Down syndrome includes - Amniocentesis - Chorionic villus sampling - Cordocentesis	92.7	7.3
5. Amniocentesis has less risk of abortion(0.3-0.5%) than the any other invasive methods	92.9	7.1

Table 3. Knowledge of Down syndrome screening (n = 82)

Knowledge	True (%)	False (%)
1. Using maternal age of more than or equal to 35 years as a Down syndrome screening tool had detection rate of 20-30%	69.5	30.5
2. Good screening method should be high sensitivity, low false positive and high positive predictive value	91.5	9.5
3. Interpreted maternal serum screening test in second trimester: decrease MSAFP and estriol, increase free β -hCG and inhibin-A: increase fetal risk for Down syndrome	92.7	7.3
4. Gestational age for NT measurement is 11-14 weeks	93.9	6.1
5. Quad screening in second trimester has sensitivity 75% and false positive 5%	76.8	23.2
6. Gestational age for maternal serum biochemistry in second trimester is 16-18 weeks	86.6	13.4

PAPP-A = pregnancy-associated plasma protein-A; NT = nuchal translucency; MSAFP = maternal serum alpha-fetoprotein; Quad = quadruple; Quad screen: MSAFP, hCG, unconjugated estriol, inhibin-A

attitude towards Down syndrome screening for all pregnant women (Fig. 2). Seventy-six percent had a positive attitude towards using a maternal age of more than or equal to 35 years as Down syndrome screening (Fig. 3). Most residents (70-80%) had a positive attitude towards the first trimester, second trimester and integrated test for Down syndrome screening (Fig. 4).

To identify factors affecting attitudes towards DS screening, a univariate logistic regression analysis of possible variables including training institutes, age, sex, and counseling experience was performed, but none of these showed a difference (Table 4). However, the residents who had experience in counseling patients more than or equal to 10 cases per month are female doctors and seem to have more positive attitudes.

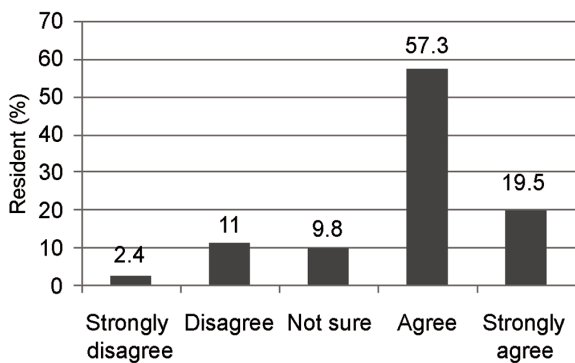


Fig. 3 Attitude towards DS screening for maternal age more than or equal to 35 years

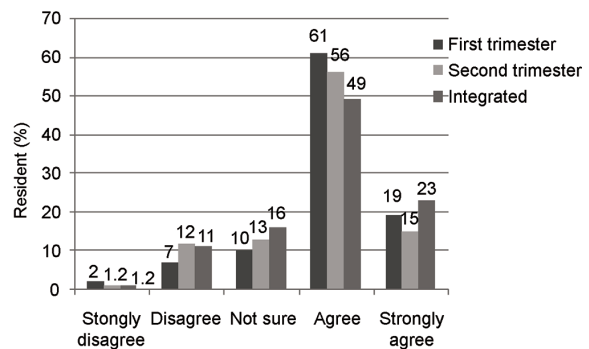


Fig. 4 Attitude towards first trimester, second trimester and integrated DS screening

Table 4. Factors affecting attitudes of Down syndrome screening

Factors	Positive attitudes (%)	p-value*
Training institute		
Complete genetics testing facility (n = 64)	45.3	0.80
Incomplete genetics testing facility (n = 18)	38.9	
Counseling patients/month		
Less than 10 patients (n = 51)	39.2	0.30
More than or equal to 10 patients (n = 31)	51.5	
Age (years)		
Less than 30 (n = 48)	43.8	1.00
More than or equal to 30 (n = 34)	44.1	
Sex		
Female (n = 53)	56.7	0.08
Male (n = 29)	36.5	

* By univariate logistic regression

Table 5. Preferable tests of Down syndrome screening

Screening test	Percent
First trimester ultrasonography: nuchal translucency measurement	59.8
First trimester maternal serum screening: β -hCG and PAPP-A	15.9
Second trimester ultrasonography: anomaly scanning	7.3
Second trimester maternal serum screening: triple/quadruple test	17.0

Triple test: MSAFP, hCG, unconjugated estriol

Sample size was probably not enough to show the difference. Nuchal translucency measurement during the first trimester was the most preferable screening method (59.8%, Table 5).

Discussion

The present study has demonstrated that the final year Thai Obstetrics and Gynaecology residents had good knowledge of Down syndrome and its screening tests, but more than half of them had a negative attitude towards Down syndrome screening for all pregnant women. The most preferable method was first trimester nuchal translucency measurement by ultrasound. Most of them had a positive attitude to all screening methods. Training institutes, age, sex, and counseling experience did not affect the attitudes towards Down syndrome screening.

Knowledge and attitudes towards DS and its screening test in obstetricians are similar across studies. The study from the UK⁽⁶⁾, which was a questionnaire survey, compared the knowledge of Down syndrome screening among general practitioners, hospital midwives, community midwives, and obstetricians. They found that the obstetricians had the highest mean score of 75%, quite similar to our study, which had a

mean score of 81%. The study by Tyzack et al⁽⁷⁾, showed that most respondents had positive attitudes towards counseling for all pregnant women, and the preferable method from the study were the NT measurement and second trimester serum biochemistry. The study also showed that almost half of the respondents believed that nuchal translucency was the most effective method of screening available, which can be used at least locally. However, NT measurement has a detection rate of only 64 to 70%⁽⁸⁾, with the strict requirement of appropriate ultrasound equipment and specific training. This technique should be limited to tertiary centers and individuals meeting these criteria⁽⁹⁾. The greater concern is that most pregnant women in Thailand have late prenatal cares, which lead to less opportunity to screen during this period.

A recent survey of knowledge, that women have regarding Down syndrome, suggested that women had poor knowledge about the condition and the screening tests for Down syndrome. However, the majority of women who had a positive attitude towards the screening test and were willing to accept the test⁽¹⁰⁾. The most important sources of knowledge and prenatal testing for Down syndrome are the health care providers, whether hospital or community-based.

Therefore, the knowledge from the health care providers is very important.

Most of our respondents had a negative attitude towards Down syndrome screening for all pregnant women. The authors did not explore in detail the reason for this. However, it could be explained by many complex problems. The screening tests have been implemented in Thailand for the last few years and are mostly available in private services, not in the public health care services. As Cleary-Goldman et al⁽⁶⁾ cohort survey showed, the knowledge and routine use of Down syndrome screening with the respondents' patients were only 78%. With regards to counseling for aneuploidy screening and prenatal diagnosis, only 55% of respondents felt that their training was adequate. Another problem is the cost of the screening tests. It requires both expertise and standard laboratory testing. In general, serum screening has been found to be more cost-effective than maternal age screening. To schedule an amniocentesis for women aged more than 35 years is not a cost effective strategy and should be abandoned⁽¹¹⁾. The cost effectiveness of DS screening paradigms are a high uptake of maternal screening, a low cost of screening tests and a high uptake rate of invasive prenatal diagnosis procedures in patients with positive serum tests. More research about the cost effectiveness should be performed in the near future to find out the effective screening methods that are appropriate to the local setting.

The advantage of this present study was that it recruited only the residents who had just finished training, which represent the new generation of obstetricians who would deal with this issue in the future. There were some limitations of the current study. The sample size was quite small due to the limitation of time and if the non-respondents had other views in this survey, the results may be different. Regarding the negative attitude, the authors did not know the reason why they were against that issue. A new practice of screening for DS has not been widely used in routine antenatal care. However, the present study showed the knowledge competencies of young obstetricians and reflected that a relevant training program about these issues should be developed in the near future.

In conclusion, Thai obstetrics and gynaecology residents had good knowledge and positive attitude towards Down syndrome and its screening tests. However, they had a negative attitude towards DS screening in all pregnant women. As a new paradigm for DS screening has been widely implemented in the routine health care services, training programs

including continuous education about serum screening for general health care providers will be needed to advance in this field.

Potential conflicts of interest

None.

References

1. Dzurkova D, Pikhart H. Down syndrome, paternal age and education: comparison of California and the Czech Republic. *BMC Public Health* 2005; 5: 69.
2. Cuckle HS, Wald NJ, Lindenbaum RH. Maternal serum alpha-fetoprotein measurement: a screening test for Down syndrome. *Lancet* 1984; 1: 926-9.
3. Nicolaides KH, Snijders RJ, Gosden CM, Berry C, Campbell S. Ultrasonographically detectable markers of fetal chromosomal abnormalities. *Lancet* 1992; 340: 704-7.
4. Morris JK, Alberman E. Trends in Down's syndrome live births and antenatal diagnoses in England and Wales from 1989 to 2008: analysis of data from the National Down Syndrome Cytogenetic Register. *BMJ* 2009; 339: b3794.
5. Cleary-Goldman J, Morgan MA, Malone FD, Robinson JN, D'Alton ME, Schulkin J. Screening for Down syndrome: practice patterns and knowledge of obstetricians and gynecologists. *Obstet Gynecol* 2006; 107: 11-7.
6. Sadler M. Serum screening for Down's syndrome: how much do health professionals know? *Br J Obstet Gynaecol* 1997; 104: 176-9.
7. Tyzack K, Wallace EM. Down syndrome screening: what do health professionals know? *Aust N Z J Obstet Gynaecol* 2003; 43: 217-21.
8. Malone FD, Canick JA, Ball RH, Nyberg DA, Comstock CH, Bukowski R, et al. First-trimester or second-trimester screening, or both, for Down's syndrome. *N Engl J Med* 2005; 353: 2001-11.
9. ACOG Practice Bulletin No. 77: screening for fetal chromosomal abnormalities. *Obstet Gynecol* 2007; 109: 217-27.
10. Pruksanusak N, Suwanrath C, Kor-Anantakul O, Prasartwanakit V, Leetanaporn R, Suntharasaj T, et al. A survey of the knowledge and attitudes of pregnant Thai women towards Down syndrome screening. *J Obstet Gynaecol Res* 2009; 35: 876-81.
11. Gekas J, Gagne G, Bujold E, Douillard D, Forest JC, Reinharz D, et al. Comparison of different strategies in prenatal screening for Down's syndrome: cost effectiveness analysis of computer simulation. *BMJ* 2009; 338: b138.

ความรู้และเจตคติของแพทย์ประจำบ้านไทยสาขาสูติศาสตร์และนรีเวชวิทยาต่อการตรวจคัดกรองกลุ่มอาการดาวน์

อุ๋นใจ กอนันตกุล, เพ็ญวดี อวระภาค, จิตเกษม สุวรรณรัฐ, จิตติมา สุนทรสัจ, ธารางรัตน์ หาญประเสริฐพงษ์

วัตถุประสงค์: เพื่อสำรวจความรู้และเจตคติเรื่องการตรวจคัดกรองกลุ่มอาการดาวน์ของแพทย์ประจำบ้านไทย สาขาสูติศาสตร์และนรีเวชวิทยา

วัสดุและวิธีการ: ศึกษาโดยให้แพทย์ประจำบ้านสาขาสูติศาสตร์และนรีเวชวิทยาจำนวนทั้งหมด 136 ราย ตอบแบบสอบถามเกี่ยวกับความรู้และเจตคติเรื่องการตรวจคัดกรองกลุ่มอาการดาวน์ในหญิงตั้งครรภ์ในวันสุดท้ายของการสอบวุฒิปริญญาตรี ปี พ.ศ. 2549-2550 ข้อมูลถูกวิเคราะห์โดยใช้โปรแกรม SPSS สำหรับวินโดวส์รุ่น 15.0

ผลการศึกษา: แบบสอบถามที่ได้รับกลับและตอบสมบูรณ์มีจำนวนทั้งสิ้น 82 ฉบับ (ร้อยละ 60) คะแนนความรู้และการตรวจคัดกรองกลุ่มอาการดาวน์ได้ร้อยละ 81 ร้อยละ 80 ของผู้ตอบ (65/82) มีเจตคติเชิงบวกต่อการให้คำแนะนำปรึกษาการตรวจคัดกรองกลุ่มอาการดาวน์แก่หญิงตั้งครรภ์ทุกราย ร้อยละ 54 ของผู้ตอบ (44/82) มีเจตคติเชิงลบต่อการตรวจคัดกรองกลุ่มอาการดาวน์ในหญิงตั้งครรภ์ทุกราย ร้อยละ 60 ของผู้ตอบ (49/82) ชอบการตรวจคัดกรองด้วยการตรวจวัดความหนาของน้ำได้ฟิวหนิงบริเวณคอทารก (nuchal translucency) ด้วยคลื่นเสียงความถี่สูงในไตรมาสแรก สถาบันฝึกอบรม อายุ เพศ และประสบการณ์การให้คำแนะนำปรึกษาไม่มีผลต่อเจตคติของแพทย์ประจำบ้าน

สรุป: แพทย์ประจำบ้านสาขาสูติศาสตร์และนรีเวชวิทยาปีสุดท้ายมีความรู้ที่ดีและเจตคติเชิงบวกต่อการตรวจคัดกรองกลุ่มอาการดาวน์ แต่มีเจตคติเชิงลบต่อการตรวจคัดกรองในหญิงตั้งครรภ์ทุกราย โปรแกรมการศึกษาและการฝึกอบรมต้องมีการพัฒนาข้อดีในด้านนี้ก่อนการตรวจคัดกรองจะมีการบริการอย่างแพร่หลาย
