Awareness of Obstetric Danger Signs and Associated Factors among Pregnant Women Attending Antenatal care at the Faculty of Medicine Vajira Hospital

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Abstract

Objective: To discover the prevalence of good danger signs awareness, associated factors, and predictive factors for good danger signs awareness in pregnant women attending antenatal clinic.

Methods: A cross-sectional study was conducted at Faculty of Medicine Vajira Hospital, from 1 June to 31 December 2017. A total 430 pregnant women gave written informed consent and 20 minutes interviewed by a well-trained research assistant at antenatal clinic, using a data record form which included demographic profile, parity, number of antenatal visits, gestational age and 16 pregnancy danger signs. The participants who recognized at least 75 percent of the total items of pregnancy danger signs were considered as 'good awareness', 50 – 74 of the total items were 'fair awareness' and 0 percent to 49 percent of the total items were 'poor awareness'.

Results: This study showed the prevalence of good danger signs awareness was 59.8%. The good danger signs awareness was significantly associated with bachelor's degree graduation or higher, gestational age > 28 weeks, and antenatal visits ≥ 4. Significant predictive factors for good danger signs awareness were pregnant women who had a bachelor's degree or higher (OR$_{adj}$ 2.02, 95% CI (1.08-3.37), p< 0.001) and antenatal visits ≥ 4 (OR$_{adj}$ 1.89, 95% CI (1.27-2.82), p = 0.002).

Conclusions: The prevalence of good danger signs awareness was 59.8%. Associated factors were bachelor education or higher, more gestational age, and number of antenatal visits ≥ 4. Predictive factors for good awareness were high education and antenatal visits ≥ 4.

Keywords: pregnancy, danger signs, awareness, antenatal care

ความตระหนักต่อสัญญาณอันตรายของการตั้งครรภ์และปัจจัยที่มีความสัมพันธ์ในสตรีตั้งครรภ์ที่ฝากครรภ์ในคณะแพทยศาสตร์วชิรพยาบาล

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาความชุกของความตระหนักถึงสัญญาณอันตรายของการตั้งครรภ์ดี ปัจจัยที่มีความสัมพันธ์ และปัจจัยทำนายความตระหนักดีถึงสัญญาณอันตรายของการตั้งครรภ์ในสตรีตั้งครรภ์ที่มาฝากครรภ์ที่คณะแพทยศาสตร์วชิรพยาบาล

วิธีดำเนินการวิจัย: การศึกษาแบบตัดขวางที่คณะแพทยศาสตร์วชิรพยาบาล ตั้งแต่เดือนมิถุนายน ถึงเดือนธันวาคม 2560 สตรีที่มาฝากครรภ์จำนวน 430 รายได้รับการสัมภาษณ์ที่ประกอบด้วยข้อมูลประชากร ข้อมูลด้านสูติศาสตร์ และสัญญาณอันตรายของการตั้งครรภ์ ผู้เข้าร่วมวิจัยที่รับรู้ถึงสัญญาณอันตรายของการตั้งครรภ์อย่างน้อย ร้อยละ 75 ถือว่ามี'ความตระหนักถึงสัญญาณอันตรายของการตั้งครรภ์ดี' ร้อยละ 50 – 74 ถือว่ามีความตระหนักถึงสัญญาณอันตรายของการตั้งครรภ์ค่อนข้างดี และร้อยละ 0 – 49 ถือว่ามี'ความตระหนักถึงสัญญาณอันตรายของการตั้งครรภ์ไม่ดี

ผลการศึกษา: การศึกษานี้พบว่าความชุกของความตระหนักถึงสัญญาณอันตรายของการตั้งครรภ์ดีร้อยละ 59.8 ความตระหนักถึงสัญญาณอันตรายของการตั้งครรภ์ดีมีความสัมพันธ์อย่างมีนัยสำคัญกับการศึกษาตั้งแต่ระดับปริญญาตรีขึ้นไป อายุครรภ์มากกว่า 28 สัปดาห์ และฝากครรภ์ตั้งแต่ 4 ครั้งขึ้นไป ปัจจัยที่มีนัยสำคัญในการทำนายความตระหนักถึงสัญญาณอันตรายของการตั้งครรภ์ดีได้แก่สตรีตั้งครรภ์ที่มีการศึกษาตั้งแต่ระดับปริญญาตรีขึ้นไป (OR$_{adj}$ 2.02, 95% CI (1.08-3.37), p< 0.001) และฝากครรภ์ตั้งแต่ 4 ครั้งขึ้นไป (OR$_{adj}$ 1.89, 95% CI (1.27-2.82), p = 0.002).

สรุป: ความชุกของความตระหนักถึงสัญญาณอันตรายของการตั้งครรภ์ดีร้อยละ 59.8 ซึ่งมีความสัมพันธ์กับการศึกษาตั้งแต่ระดับปริญญาตรีขึ้นไป อายุครรภ์มากขึ้น และฝากครรภ์ตั้งแต่ 4 ครั้งขึ้นไป ปัจจัยทำนายความตระหนักถึงสัญญาณอันตรายของการตั้งครรภ์ดีได้แก่สตรีตั้งครรภ์ที่มีการศึกษาสูงและฝากครรภ์ตั้งแต่ 4 ครั้งขึ้นไป

คำสำคัญ: การตั้งครรภ์, สัญญาณอันตราย, ความตระหนัก, ฝากครรภ์

Introduction

Pregnancy is a very sensitive period in which unexpected life-threatening complications may arise at any period, from conception to postpartum period. Many complications may appear as signal signs prior to the severe symptoms. In 2015, the World Health Organization (WHO) estimated that approximately 830 women die from preventable causes related to pregnancy and childbirth, and 99% of all maternal deaths occur in developing countries. [1,2]

Although a safe motherhood program is successful in reducing maternal mortality, it does not mean high utilization of health services. The problem may be due to the three phases of delay to access care: delay in making the decision to seek care, delay in arrival at a health facility, and delay in receiving appropriate care.[3] Delay in seeking care is the key factors leading to maternal death, which can be associated with lack of knowledge about obstetric danger signs.[3]

Danger signs in pregnancy refer to symptoms that identify danger of pregnancy which can be recognized by those who were not public health worker. These symptoms included vaginal bleeding, decrease or loss of fetal movement, contraction in preterm period, severe nausea and vomiting, severe abdominal pain, blurred vision, severe headache, epigastric pain, shortness of breath, fluid running from a vagina, swelling body, fever, convulsion, loss of consciousness, dizziness and abnormal vaginal discharge.[4]

Awareness of pregnancy danger signs could be a strategy to reduce delayed decisions to seek care from health services as well as obstetric complications.[5] A previous study in Nepal has shown that women who knew any pregnancy danger sign tended to deliver at a health facility.[6] Therefore, danger signs awareness is the first step to recognition along with taking appropriate and timely action to access hospital for emergency obstetric and newborn care.[7]

However, reports of good danger signs awareness vary from 15 – 50%,[4,8,9] depending on study setting and population. Most studies of pregnancy danger signs awareness have been conducted in developing countries such as Ethiopia, Tanzania, Malaysia, Nepal and India. Little is known about danger signs awareness status and associated factors in Thailand. Moreover, most previous published papers were conducted in rural areas. There are few studies in urban settings where available healthcare facilities, socio-demographics and cultural conditions are different. This study, therefore, aimed to assess the danger signs awareness status and factors associated with danger signs awareness among pregnant women attending antenatal clinic (ANC) at Faculty of Medicine Vajira Hospital, Thailand.

Materials and Methods

A cross-sectional study was conducted among antenatal pregnant women at Faculty of Medicine Vajira Hospital, Thailand, from 1 June to 31 December 2017. Approval for the study was obtained from the Institutional Review Board (IRB) at Faculty of Medicine Vajira Hospital.

The studied population consisted of all pregnant women who received antenatal care at Faculty of Medicine Vajira Hospital. Inclusion criteria were mothers of Thai nationality who could communicate in Thai, low-risk (no complications) and singleton pregnancy. Exclusion criteria were having maternal and fetal complications at date of interview, being a healthcare worker and referred from other healthcare facility.

Sample size was calculated based on previous studies in Malaysia, in the same region as Thailand, where they found that 48.3% of pregnant women had good danger signs awareness.[4] The powers of 80% and a level of confidence of 95% were applied to determine the difference between groups. Adding 10 % for incomplete data, a total of 430 participants were included in this study by simple random sampling technique.

All participants were explained the study processes, gave written informed consent and interviewed by a well-trained research assistant at ANC clinic. For those participants who were under the legal age of consent, their parents or legal guardians provided informed consent on their behalf. The participants were interviewed using a

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data record form which included demographic profile, parity, number of antenatal visits, gestational age at interview, and pregnancy danger signs including 12 items during pregnancy and 4 items during labor and delivery. The participants who recognized at least 75 percent of the total items of pregnancy danger signs (12 items) were considered as 'good awareness', 50 – 74 of the total items (6-11 items) were 'fair awareness' and 0 percent to 49 percent of the total items (0-5 items) were 'poor awareness'. [4]

The primary outcome of this study was the percentage of good danger signs awareness. The secondary outcomes were associated factors and predicting factors of good danger signs awareness. The data were analyzed by statistician using SPSS version 22 (IBM, Armonk, NY, USA). Chi-square test was used for categorical data analysis. Univariate and multivariate logistic regression analysis were used to determine independent predictors of good danger signs awareness and presented as odds ratio and 95% confidence interval (CI). P-value of less than 0.05 was considered statistically significant.

Results

A total 430 pregnant women were eligible for analysis. Of all the participants, 257 (59.8%) pregnant women had good danger signs awareness, 117(27.2) had fair awareness and 56 (13.0%) had poor awareness. The most known danger sign was vaginal bleeding both during pregnancy (96%) and during labor and delivery (88.1%). The least known danger sign during pregnancy was epigastric pain (67.9%), and during labor and delivery it was retained placenta (62.1%) (Table1).

Table 1:

Awareness of danger signs in pregnancy among antenatal women (n=430)

Variables	Numbers	Percentage
Danger signs awareness		
Good (≥ 75% of the total danger signs)	257	59.8
Fair (50-74 % of the total danger signs)	117	27.2
Poor (<50% % of the total danger signs)	56	13.0
Danger signs [a]		
During pregnancy		
1. Vaginal bleeding	413	96.0
2. Decreased Fetal movement	406	94.4
3. Uterine contraction	354	82.3
4. Severe nausea and vomiting	352	81.9
5. Epigastric pain	292	67.9
6. Severe abdominal pain	368	85.6
7. Severe headache	315	73.3
8. Shortness of breath	346	80.5
9. Fluid flowing from vagina	351	81.6
10. Swelling body	344	80.0
11. Blurred vision	293	68.1
12. Convulsion	295	68.6
During labor and delivery		
1. Vaginal bleeding	379	88.1
2. Prolonged labor	280	65.1
3. Convulsion	274	63.7
4. Retained placenta	267	62.1

[a] multiple response

Table 2 shows characteristics of total antenatal women. Most participants were 20 – 29 years old (56.0%), had a secondary school education (41.9%), were government officers (46.5%), were Buddhist (96.5%), had income more than 20,000 baht (63.5%), were multipara (62.6%), were 29 – 40 weeks at interview (49.1%), and number of was ANC ≥ 4 (61.2%).

The association between baseline characteristics with level of danger signs awareness, good awareness (n=257) and poor awareness (n=173), is shown in Table 2. The pregnant women with good awareness had significantly more bachelor's degrees or higher than those with lower education (p=0.027), more gestational age 29 – 40 weeks than below 29 weeks (p=0.001), and a greater number of antenatal visits ≥ 4 than < 4 (p=0.001).

Table 2:

Demographic characteristic of antenatal women and association with level of danger signs awareness

Characteristic	Total (n=430)	Level of awareness		P value
		Good (n=257)	Fair/Poor (n= 173)	
Age (year)				
10-19	14 (3.2)	5(35.7)	9 (64.3)	0.130
20-29	245(56.0)	147(60.0)	98(40.0)	
30-39	159(37.0)	100(62.9)	59(37.1)	
Above 40	12 (3.8)	5(41.7)	7 (58.3)	
Maternal education				
Elementary school	29 (6.7)	18 (62.1)	11 (37.9)	0.027
Secondary school	180(41.9)	105(58.3)	75 (41.7)	
Vocational/Technical	94 (21.9)	50 (53.2)	44 (46.8)	
Bachelor's degree or higher	127(29.5)	84 (66.1)	43 (33.9)	
Occupational				
Unemployed	32 (7.4)	21 (65.6)	11 (34.4)	0.562
Student	15 (3.5)	6 (40.0)	9 (60.0)	
Merchant	53 (12.4)	31 (58.5)	22 (41.5)	
Office employee	130(30.2)	78 (60.0)	52 (40.0)	
Government officer	200(46.5)	121(60.5)	79 (39.5)	
Religion				
Buddhism	415(96.5)	245(59.0)	170(41.0)	0.104
Other	15 (3.5)	12 (80.0)	3 (20.0)	
Monthly income (bath)				
Below 20,000	157(36.5)	90 (57.3)	67 (42.7)	0.433
Above 20,000	273(63.5)	167(61.2)	106(38.8)	

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Table 2:

Demographic characteristic of antenatal women and association with level of danger signs awareness (cont)

Characteristic	Total (n=430)	Level of awareness		P value
		Good (n=257)	Fair/Poor (n= 173)	
Parity				0.391
Primiparity	161(37.4)	92 (57.1)	69 (42.9)	
Multiparity	269(62.6)	165(61.3)	104(38.7)	
Gestational age				
1 – 12 weeks	52 (12.1)	17 (32.7)	35 (67.3)	0.001
13 – 28 weeks	167(38.8)	88 (52.7)	79 (47.3)	
29 – 40 weeks	211(49.1)	152(72.0)	59 (28.0)	
Number of ANC				
< 4	167(38.8)	84 (50.3)	83 (49.7)	0.001
≥ 4	263(61.2)	173(65.8)	90 (34.2)	

Table 3 showed results of logistic regression analysis. Univariable logistic regression analysis found that maternal education and number of ANC were significant factors (p<0.10). After adjusting OR estimated by multiple logistic regression adjusting for maternal education and number of ANC were analyzed. This study revealed that the significant factors predicting good danger signs awareness were pregnant women who had a bachelor's degree or higher (OR_{adj} 2.02, 95% CI (1.08-3.37), p< 0.001) and number of antenatal visits ≥ 4 (OR_{adj} 1.89, 95% CI (1.27-2.82), p = 0.002).

Table 3:

Univariate and multivariate regression analysis of factors predicting good danger signs awareness

Factors	Univariate analysis			Multivariate analysis		
	OR_{adj}	95%CI	P -value	OR_{adj}	95%CI	P -value
Maternal education						
Elementary school	1.00	Reference		1.00	Reference	
High school	5.00	0.15-6.59	0.37	2.949	0.54-16.14	0.212
Vocational/Technical	1.35	0.08-2.91	0.84	0.744	0.14-3.90	0.727
Bachelor's degree or higher	0.10	0.01-0.88	0.04	2.02	1.08-3.79	0.028
Number of ANC visits						
< 4	1.00	Reference		1.00	Reference	
≥ 4	0.29	0.11-0.73	0.01	1.89	1.27-2.82	0.002
Gestational age (Week)						
1 – 12 weeks	1.00	Reference				
13 – 28 weeks	1.18	0.58-2.39	0.65	NA	NA	NA
29 – 40 weeks	1.95	0.25-3.58	0.94	NA	NA	NA

Discussion

This cross-sectional study has identified the prevalence of danger signs awareness among pregnant women in an urban area who attended antenatal care in a tertiary hospital. Of all 430 participants, the pregnant women who had good awareness were 59.8 %, fair awareness were 27.2 %, and poor awareness were 13.0 %. This finding is consistent with the result of one study in an urban tertiary hospital in Malaysia. They found that pregnant women had higher good awareness (48.3%) than fair and poor awareness (28.1 % and 23.6 %, respectively).[4] Compared with most previous studies conducted in rural areas, women were about two times less likely to have good awareness than those in urban areas.[8,10-13] There is evidence that urban residence was associated with being knowledgeable about obstetric danger signs.[8] This higher proportion of good danger signs awareness in urban areas may be due to the population having better awareness and access to health information through more healthcare personnel and different media than rural areas. Healthcare personnel and the media are important sources of danger signs information. This has been confirmed by studies in urban tertiary hospitals from Malaysia and Nepal that the most common sources of information were healthcare personnel and the media.[4,9] Moreover, a study from Madagascar found that women who received information about danger signs during pregnancy from the mobile health project were associated with danger signs knowledge, even in rural areas.[14]

Although the findings of this study revealed greater good danger sign awareness than prior reports, the result was still considered low and might not be enough to reduce pregnancy complications. This led to reconsideration of the quality and coverage of existing antenatal education programs. Moreover, education through various available channels should be used to increase danger signs awareness, such as mobile phone, social media and hotline telephone. Additionally, danger sign awareness does not guarantee that an individual will recognize it in practice, because danger signs are measuring spontaneous knowledge without fully measuring an individual's ability to recognize problems and grasp the severity of danger signs.[15] Therefore, healthcare personnel should not only increase danger signs awareness, but also explain severity and progression of danger symptoms and signs, together with initial care before going to hospital.

The most commonly mentioned danger sign during pregnancy and labor/delivery in this study was vaginal bleeding, which was comparable with previous studies.[8,16,17] This can be explained by the fact that vaginal bleeding is a visible symptom that women feel is harmful to the fetus, which makes them realize that it is a danger sign of pregnancy. However, it is necessary to educate pregnant women about other symptoms which are poor awareness and also dangerous to mother and baby, such as convulsion, prolonged labor and blurred vision.

This study also found that women with good awareness had significantly higher education, more gestational age and more antenatal visits. This finding is consistent with previous studies.[10,13,16] These characteristics are likely to indicate better danger signs awareness. Higher educational backgrounds can help pregnant women to understand the information, suggestions, and practices for pregnancy care,[7,11] whereas less education may affect their attitude, beliefs, and proper decision making towards health care. Adequate antenatal visits will enhance pregnant women's knowledge and concern for their pregnancy status and possible complications. However, this study found that maternal age, occupation, income and parity were not associated with good awareness, in contrast to other studies.[10,17] This indicates the need to inform all pregnant women about danger

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signs awareness during antenatal period irrespective of age, education, income and parity. Moreover, healthcare personnel should also focus on enhancing danger signs awareness among pregnant women who are at risk of poor danger signs awareness, such as those with low education or poor antenatal visits.

Results from multiple logistic regression analysis revealed that significant predictive factors for good awareness were 2.02 times more prevalent among those with bachelor's degrees or higher and 1.89 times more in those with ≥ 4 antenatal visits. This finding is consistent with earlier reports. Particularly, higher education is the common significant predictive factor for good awareness in many studies, including studies from Tanzania,[10] Ethiopia,[17,18] Madagascar,[14] and Jordan. [19] Thus, antenatal education in this group will have a greater chance of increasing good awareness.

The results of this study have implications for healthcare institutes to fully implement pregnancy danger signs education programs with adequate population coverage during the antenatal period. This approach may be generalizable to pre-conceptional women to prevent maternal and neonatal mortality. Additionally, postpartum mothers probably benefit from danger signs education for further pregnancy.

The strengths of this study were large sample size, and the participants were interviewed by only a well-trained research assistant. However, this study had many limitations. First, it was a cross-sectional study, hence the relationship between variables could not be proven. Second, the answers were self-reported with no means of verification and thus subject to bias. Third, participants were interviewed while currently pregnant, rather than after completing their pregnancies. They may not yet have had the opportunity or need to decide on danger signs. Finally, factors that might affect danger signs awareness, such as attitudes and beliefs about birth preparedness, decision-making power, male partner influence, socioeconomic status of family, accessibility to healthcare services and reasons for seeking healthcare service were not evaluated. Further research would study pregnancy danger signs awareness comparing adult and adolescent pregnancy. Other research could study the effect of pregnancy danger signs awareness on maternal morbidity and mortality rate. Moreover, suggestions for future research should be extended to the study of family and community roles in pregnancy danger signs awareness.

Conclusion

Awareness of obstetric danger signs is a strategy to reduce delayed decision to seek care from health services as well as reducing obstetric complications. Although good danger signs awareness in this study was high, improving quality and coverage of antenatal education program using all available channels should be used to increase danger signs awareness. Higher education, more gestational age and more antenatal visits were associated with good dangers signs awareness. This study recommends healthcare personnel to encourage pregnant women with danger signs knowledge using various medias, irrespective of age, education, income and parity. Significant predictive factors for good awareness were high education and attending ≥ 4 antenatal visits. Danger signs education program in this group during antenatal period is likely to increase danger signs awareness.

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Conflict of interest

The authors report no conflicts of interest in this research.

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