

# Perceptions and effects of antenatal education

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## ABSTRACT

**الأهداف:** استطلاع آراء النساء اللاتي راجعن عيادات الحوامل وقياس مستوى الرضى فيما يتعلق بالثقفى الصحي ومدى تغير المعتقدات الخاطئة فيما يتعلق بصحة الحمل والولادة ورعاية المولود بعد زيارة عيادات الحوامل.

**الطريقة:** أجريت هذه الدراسة المقطعية خلال الفترة من نوفمبر 2009 حتى فبراير 2010 حيث تم توزيع الاستبانة المعدة لأغراض الدراسة على 300 مراجعة لعيادات ما بعد الحمل في مركزي الاسكان وخشم العان لطب الأسرة بالحرس الوطني بالرياض، المملكة العربية السعودية.

**النتائج:** تم تعبئة الاستبانة من 300 مراجعة. معظم المشاركات بدأن زيارة عيادات الحوامل في الشهر الرابع من الحمل والأغلبية حققن من 3-6 زيارات. المراجعات ذوات التعليم العالي راجعن بصورة متكررة ويشكل أكبر من غيرهن وتلقين تثقيفاً صحياً أكثر من غيرهن. ما يقارب 80% من عينة الدراسة كن راضيات عن مستوى التثقيف الصحي في عيادات الحوامل. وكانت أكثر المواضيع اللاتي تلقينها الرضاغة الطبيعية 83%، علامات الولادة 75.3%، ورعاية المولود 74.7% غير أن معظم المشاركات في الدراسة لم يتلقين تثقيفاً صحياً كافياً عن جميع الأمور الأساسية في صحة الحمل والولادة ورعاية ظهرت علاقة خطية عكسية بين درجة التثقيف الصحي المولود. للمرأة والعمر.

**خاتمة:** بينت الدراسة أن مستوى التثقيف الصحي للحوامل في عيادات الحوامل لم يكن كافياً على رغم الأثر الإيجابي له في تصحيح المفاهيم الخاطئة فيما يتعلق بصحة الحمل والولادة ورعاية المولود. ينصح بتكثيف أنشطة التثقيف الصحي في عيادات الحوامل وتوفير الوقت والكوادر اللازمة لتقدمها بطريقة مهنية.

**Objectives:** To assess the quality and effect of antenatal health education on health-related issues during pregnancy, and the benefits to women during the peripartum period.

**Methods:** This is a descriptive study of 300 women attending the Postnatal Clinics and Women Health Clinics in 2 Family Medicine centers at King AbdulAziz Medical City, National Guard Health Affairs, Riyadh, Saudi Arabia. The study was carried out between

November 2009 and February 2010. A predesigned questionnaire was used.

**Results:** Three hundred women completed the questionnaire. Most women made their first antenatal visit during the fourth month of pregnancy, and most had 3-6 antenatal care (ANC) visits. Highly educated mothers had significantly more ANC visits and attended the first visit earlier. Nearly 80% of subjects were satisfied with the health education provided during ANC visits. Multiparous women were found to receive less health education than primiparous women. Most reported receiving education on breast feeding (83%), signs of labor (75.3%), and baby care (74.7%). However, most of the subjects did not receive all of the important information that should be given during ANC. There was a negative linear relationship between health education score of women and their age.

**Conclusion:** This study quantified the inadequate level of health education received by pregnant women during ANC.

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An antenatal care (ANC) includes recording medical history, assessment of individual needs, advice and guidance on pregnancy and delivery, screening tests, education on self-care during pregnancy, identification of conditions detrimental to health during pregnancy, first-line management, and referral if necessary.<sup>1</sup> Education is an important component of prenatal care, particularly for women who are pregnant for the first time.<sup>2,3</sup> There were many studies was carried out which

found that educated women have a better pregnancy outcome compared with uneducated women and that education during the antenatal period can reduce pregnancy and delivery complications.<sup>4-8</sup> In studies done about women's satisfaction with prenatal care received at primary health care centers, 60% of the mothers had very low or low levels of satisfaction.<sup>9</sup> For Saudi women, information received during ANC visits is important, and most of the women feel that some topics should be addressed more in depth, such as nutrition, and the types of food that can and cannot be eaten.<sup>10</sup> It is a well-known fact that literacy among women in many developing countries is low and that there are sociocultural beliefs and practices with adverse effects on pregnancy and birth occurring even among educated women.<sup>11,12</sup> We undertook this study because in Saudi Arabia, there have been few studies assessing health education during ANC and false beliefs among Saudi women, and no similar study had been carried out in King Abdul-Aziz Medical City in Riyadh. The objectives of our study is to assess the awareness of pregnant women on health education on antenatal care during their postpartum follow up visit, to assess the beliefs on health-related issues during pregnancy and the peri-partum period and to determine the association of socio-demographic and maternal characteristic with scores of health education and false belief.

**Methods.** Prior to study conduction and for literature review, we search the Pub Med website for all published articles related to our topic using the keywords: "antenatal care" "Health Education" "health beliefs" "misconception" and "Saudi Arabia".

We conducted this descriptive study on primiparous and multiparous women attending the postnatal clinics in 2 Family Medicine Centers at King Abdul-Aziz Medical City, National Guard Health Affairs, Riyadh, Saudi Arabia (King Abdul-Aziz Housing Clinics [Iskan] and Health Clinics for Specialized Care [HCSC]). In both centers, women are booked for post-partum care within 3 days up to 4 weeks after delivery, either in Post Natal Clinics or at Women Health Clinic (at HCSC). The sample size was calculated to be 300 assuming a minimum of 20% awareness of antenatal care among postpartum women, with a +5% accuracy at  $p=0.05$  level of significance and 20% non-response rate.

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The researcher or trained unit assistant of the clinics collected data using a predesigned questionnaire during 4 months period from November 2009 to February 2010. During the study period, they approached all postpartum women who attended the clinic to fill-up a questionnaire voluntarily while they were in the waiting area, and interviewed those who were illiterate. Those with high risk pregnancies were excluded. Women more than 4 weeks postpartum were excluded to minimize any recall bias. The post-partum period was selected as women needed to be sufficiently exposed to ANC in order to assess the appropriateness of information and health education, which they had received.

The questionnaire which was partly developed via searching from the literature on awareness of antenatal care. In addition, some questions were based on personal experiences, by interviewing health educators, and by searching the internet. The questionnaire was standardized by conducting a pilot study on 25 women so as to observe its appropriateness and to improve the clarity of the questions. The questionnaire for the study was prepared both in Arabic and English. It was reviewed and approved by 2 experts.

The Questionnaire consisted of the following variables: 1) Sociodemographic variables: age, occupation, education level, number of children, number of anc visits, month of first ANC visit. 2) Thirteen questions on health education: first trimester symptoms, nutrition, vitamin and iron intake, exercise, personal and dental hygiene, breast care, breast feeding, radiation risk, baby care, labor signs, and warning signs. In addition, sources of women's health information and satisfaction with the health education received was obtained. 3) False beliefs section which included 19 questions: gender determination of the fetus, belly shape and gender, cravings and birthmarks, mother's looking and baby face, doubling food intake, multivitamin and fetal weight, avoiding specific foods, medication safety during pregnancy, heartburn and thickness of baby's hair, minimization of movement, intercourse and abortion, umbilical cord wrap and sleeping position, 7 month baby versus 8 month baby, bleeding gums, epidural analgesic and paralysis, perfume and inflammation, reduction of water intake, avoiding bathing, and breastfeeding and sagging breasts. Health education quality section information received on the 13 variables were scaled as 1/yes or 0/no and summed for each patient. The final score was analyzed as a continuous variable. In the false belief section, 19 had inquired about it and each was given a score of 1 or 0 if the belief was present or not. The number of false beliefs was totaled for each patient. The higher the score,

the more the patient was assumed to have false beliefs. The final score was analyzed as a continuous variable. Other variables included: the benefit of repetition of information (Q11) and overall satisfaction with ANC care (Q13). Additional variables of receiving HE on false beliefs and of the effectiveness of HE in changing false beliefs were also scaled with 1/0 for each changed belief and summed up for each patient and treated as continuous variables.

Data was entered, checked and modified for analysis in Microsoft Excel. We used SPSS version 18.0 statistical software. Descriptive statistics were carried out on all variables exploring mean, median, mode, frequencies and percentages. Cross tabulation using Chi-square

**Table 1 -** Socio-demographic characteristics of the study sample of women 300 Saudi postpartum women.

| Demographic               | No    | (%)    |
|---------------------------|-------|--------|
| <i>Age (years)</i>        |       |        |
| <30                       | 153   | (51.0) |
| ≥30                       | 147   | (49.0) |
| Min/Max                   | 14/48 |        |
| <i>Occupation</i>         |       |        |
| Housewives                | 243   | (81.0) |
| Employed                  | 38    | (12.7) |
| Student                   | 19    | (6.3)  |
| <i>Number of children</i> |       |        |
| ≤2                        | 93    | (31.0) |
| 3-5                       | 107   | (35.7) |
| ≥6                        | 100   | (33.3) |
| <i>Educational level</i>  |       |        |
| Illiterate                | 105   | (35.0) |
| Up to high school         | 136   | (45.3) |
| Above high school         | 59    | (19.7) |

was carried out. In addition, t-test, ANOVA and linear regression were used to explore relationships. A p-value of < 0.05 was considered as statistically significant.

Ethical approval was obtained from the Family Medicine Research Committee, King Abdul-Aziz Medical City, National Guard Health Affairs. All data were maintained secured by separating participant identification and associated data. All data were analyzed in a manner that maintained confidentiality. The study was carried out in accordance with the Helsinki Declaration.

**Results.** The demographic data of 300 Saudi postpartum women are summarized in Table 1. Most women made their first antenatal visit during the fourth month of pregnancy, most of them had a 3-6 ANC visit during pregnancy, and most of them were not seen by the same physician. Fifty-nine percent of multiparas women agreed on the benefit of repetition of information each time they are pregnant. The main source of information about pregnancy and puerperium came from their relatives and friends (66%) followed by health care team in the ANC clinic (doctor/ nurse/ health educator) (53.7%), then reading from other resources (28.7%). Seventy-eight percent of subjects were satisfied with health education provided during ANC visits.

Table 2 summarizes the components of health education during ANC visits. Most of the reported receiving education were breast feeding (83%), signs of labor (75.3%), and baby care (74.7%). Thus, the important information that should be given during the

**Table 2 -** Health education during antenatal care (ANC) visits.

| No. | ANC Education                                  | Yes<br>n (%) | No<br>n (%) | Cannot recall<br>n (%) |
|-----|--|--------------|-------------|------------------------|
| 1   | Physiological changes during pregnancy         | 107 (35.7)   | 179 (59.7)  | 14 (4.7)               |
| 2   | First trimester symptoms like nausea, vomiting | 126 (42.0)   | 169 (56.3)  | 5 (1.7)                |
| 3   | Diet & nutrition                               | 151 (50.3)   | 139 (46.3)  | 10 (3.3)               |
| 4   | Importance of vitamins & iron during pregnancy | 182 (60.7)   | 107 (35.7)  | 11 (3.7)               |
| 5   | How to do exercise (pelvic exercise)           | 40 (13.3)    | 243 (81.0)  | 17 (5.7)               |
| 6   | Personal hygiene                               | 88 (29.3)    | 206 (68.7)  | 6 (2.0)                |
| 7   | Dental hygiene                                 | 86 (28.7)    | 205 (68.3)  | 9 (3.0)                |
| 8   | Care of breast                                 | 115 (38.3)   | 173 (57.7)  | 12 (4.0)               |
| 9   | Risk of radiation                              | 85 (28.3)    | 205 (68.3)  | 10 (3.3)               |
| 10  | Recognition of some serious problems           | 186 (62.0)   | 87 (29.0)   | 27 (9.0)               |
| 11  | Importance of breast feeding                   | 249 (83.0)   | 44 (14.7)   | 7 (2.3)                |
| 12  | Care of baby                                   | 224 (74.7)   | 68 (22.7)   | 8 (2.7)                |
| 13  | Signs of labor                                 | 226 (75.3)   | 63 (21.0)   | 11 (3.7)               |
| 14  | Other information                              | 1 (0.3)      | 298 (99.3)  | 1 (0.3)                |

ANC were not received by the subjects and the level of education on many topics were below 50%.

Table 3 shows the common health misconceptions related to pregnancy and puerperium.

The correlation between the mother's educational level and ANC variables was statistically significant. Highly educated mothers had fewer children, had more ANC visits during pregnancy, and attended the first visit of ANC significantly earlier compared with the illiterate mothers. The results revealed a statistically significant correlation between mother's educational level and the number of false beliefs held and the effect of HE on these beliefs for them ( $p=0.010$ ). Educated women had more false beliefs and increased acceptance of correction

for these beliefs after health education (Table 4). It was found also that women with less children have less misconceptions, more likely to have health education and more likely to benefit from health education.

The study found a negative linear relationship between health education score of women and their age. It was found, as well, that woman who came during the first trimester of pregnancy or made more ANC visits are likely to receive more health education than women who presented at the second or third trimester or had less ANC visits.

**Discussion.** We designed this study to explore the quality of health education during ANC and common health beliefs related to pregnancy and puerperium

**Table 3 -** Beliefs, health education received, and effect of health education during pregnancy and postpartum.

| No. | Traditional beliefs  | Believed previously<br>n (%) | Received health education<br>n (%) | Changed beliefs after health education<br>n (%) |
|-----|--|------------------------------|------------------------------------|---|
| 1   | Gender determination   | 77 (25.7)                    | 37 (12.3)                          | 13 (35.1)                                       |
| 2   | Relationship of belly shape and gender of baby   | 110 (36.7)                   | 22 (7.3)                           | 13 (59.0)                                       |
| 3   | Craving and birthmarks on the body of newborn  | 103 (34.3)                   | 18 (6.0)                           | 9 (50.0)  |
| 4   | Looking of pretty or ugly faces will have an effect on the composition of baby                   | 87 (29.0)                    | 16 (5.3)                           | 10 (62.5)                                       |
| 5   | Doubling of food intake  | 139 (46.3)                   | 75 (25.0)                          | 45 (60.0)                                       |
| 6   | Relationship of multivitamin & fetal weight which leads to difficult deliveries                  | 156 (52.0)                   | 122 (40.7)                         | 103 (84.4)                                      |
| 7   | To avoid certain foods during pregnancy or post-natal period                                     | 78 (26.0)                    | 29 (9.7)                           | 12 (41.3)                                       |
| 8   | Antibiotics and analgesics are harmful during pregnancy  | 111 (37.0)                   | 79 (26.3)                          | 46 (58.2)                                       |
| 9   | Heartburn means that the baby has a thick hair   | 87 (29.0)                    | 25 (8.3)                           | 18 (72.0)                                       |
| 10  | Minimization of movement and walking during pregnancy  | 116 (38.7)                   | 60 (20.0)                          | 38 (63.3)                                       |
| 11  | Sexual intercourse during pregnancy may cause abortion   | 82 (27.3)                    | 41 (13.7)                          | 19 (46.3)                                       |
| 12  | Relationship of the wrap of the umbilical cord with pregnant position                            | 78 (26.0)                    | 34 (11.3)                          | 8 (23.5)  |
| 13  | Baby delivered at 7 month of pregnancy, living better than who delivered at 8 month of pregnancy | 131 (43.7)                   | 29 (9.7)                           | 13 (44.8)                                       |
| 14  | Bleeding gums is normal and it happens for all pregnancies                                       | 94 (31.3)                    | 33 (11.0)                          | 10 (30.3)                                       |
| 15  | Epidural during childbirth causes paralysis  | 169 (56.3)                   | 72 (24.0)                          | 49 (68.0)                                       |
| 16  | The perfume after birth may cause the so-called (shamam) or inflammation                         | 124 (41.3)                   | 21 (7.0)                           | 11 (52.4)                                       |
| 17  | Reduction of water intake after child birth  | 135 (45.0)                   | 25 (8.3)                           | 14 (56.0)                                       |
| 18  | Bathing is during postpartum period  | 147 (49.0)                   | 27 (9.0)                           | 13 (48.1)                                       |
| 19  | Breast feeding leads to sagging of the breast  | 93 (31.0)                    | 24 (8.0)                           | 15 (62.5)                                       |

**Table 4 -** False belief, health education score, and effective health education score according to mother's education level.

| Variables                        | Education level |                        |           |                    | F      | P-value |
|----------------------------------|-----------------|------------------------|-----------|--------------------|--------|---------|
|                                  | Illiterate      | Primary & Intermediate | Secondary | University & Above |        |         |
| False belief score               | 6.5±2.5         | 5.4±4                  | 8.0±5.3   | 8.7±5.5            | 8.229  | ≤0.001  |
| Health education score           | 4.5±2.4         | 7.0±3.0                | 7.8±2.8   | 6.5±3.3            | 22.168 | ≤0.001  |
| Effective health education score | 1.2±1.1         | 1.3±1.7                | 1.8±2.0   | 2.0±2.4            | 3.816  | 0.010   |

**Table 5** - False belief, health education, and health education effects according to number of children.

| Variables                        | Number of children<br>(mean±SD) |         |         | F      | P-value |
|----------------------------------|---------------------------------|---------|---------|--------|---------|
|                                  | ≤2                              | 3-5     | ≥6      |        |         |
| False belief score               | 7.0±5.1                         | 7.3±4.7 | 6.8±3.3 | 0.308  | 0.735   |
| Health education Score           | 7.8±2.8                         | 6.6±3.1 | 4.3±2.4 | 39.767 | <0.001  |
| Effective Health education score | 1.8±2.0                         | 1.6±2.0 | 1.2±1.3 | 2.536  | 0.081   |

**Table 6** - Mother's educational level and antenatal care (ANC) variables.

| Variables                | Level of education |                         |           |                          | F      | P-value |
|--------------------------|--------------------|-------------------------|-----------|--------------------------|--------|---------|
|                          | Illiterate         | Primary<br>intermediate | Secondary | University and<br>higher |        |         |
| No of children           | 7.9±4.7            | 4.5±2.7                 | 2.9±1.7   | 2.3±1.3                  | 53.644 | ≤0.001  |
| No of visits             | 3.53±1.67          | 5.34±2.58               | 5.48±2.08 | 5.61±3.26                | 15.60  | ≤0.001  |
| Month of first ANC visit | 6.28±2.40          | 3.98±2.48               | 3.17±2.12 | 2.59±1.83                | 44.604 | ≤0.001  |

among Saudi women attending women's health clinics in the city of Riyadh. The result of our study showed that 41% of women had at least 5 visits for ANC during their previous pregnancy. The majority of them began antenatal visits at the fourth month of pregnancy or more. This finding is different from previous reported findings in developing countries and among Saudi women, which had shown that the median number of ANC visits was 5. A study carried out in Taif, Saudi Arabia found that 23 % had 4-6 ANC visits and 22.3% had 7-9 ANC visits.<sup>13</sup> In Gambia, 70% of pregnant women visited the ANC clinic 4 or more times.<sup>14</sup> Another study in Assuit, Egypt showed that approximately 38% of women attended 4 regular visits.<sup>15</sup> This study showed a statistically significant relationship of the mother's educational level and parity with their attendance at the ANC clinic. Highly educated mothers had more ANC visits during pregnancy and attended their first ANC visit earlier than illiterate mothers. We noticed that illiterate mothers had more children than highly educated mothers. Multiparous women had fewer ANC visits. Other studies as well have pointed to this positive association of educational level of pregnant women with their seeking for ANC clinics.<sup>16,17</sup> The explanation for this could be that more educated women have more health awareness. Our finding is consistent with previous studies where primiparous women attended ANC more regularly compared to multiparous women.<sup>15,17</sup> This may be due to the latter group's previous experiences of pregnancy or due to lack of time and opportunities to get away from their older children. Most of the participants in this study could recall being informed on the important subjects such as signs of labor, care of the baby, and the importance of breast feeding. In this study, a small proportion (13.3%)

could recall education on the importance and method of pelvic floor exercise (PFE). In a similar study from the United Kingdom, only one third of women discussed PFE during pregnancy, despite the fact that PFE was associated with a reduction in urinary incontinence.<sup>18</sup> One explanation of this could be the feeling of the physician that there was so much to discuss during an antenatal visit that PFE took low priority. Our study results showed significant association between health education and number of ANC visits, suggesting that high antenatal coverage and frequency of visits provides an opportunity for better quantity and quality of information transfer. There was a statistically significant relationship between health education and mother's educational level, where illiterate women received less health education than highly educated women. This may be due to the initiative of highly educated women in asking their physician for more information. In regard to traditional health beliefs related to pregnancy and postpartum period, the findings are similar to another study which was carried out in the northwestern region of Portugal and showed that 82% of women who were interviewed mentioned having been influenced by myths and beliefs.<sup>19</sup> The beliefs were related to self-care, rest, and the consumption or restriction of food. Our findings were supported by the results of several studies in different countries on food habits and restrictions during pregnancy.<sup>20-22</sup> As a result of these mistaken beliefs, women can lack some nutritional benefit during and after pregnancy.

The majority of the respondents in this study (56.3%) believed that epidural analgesia results in the paralysis of limbs. These findings are supported by the results of a similar studies conducted in developing countries, which also showed similar results.<sup>23,24</sup> Approximately

one third of women in our study believed that breast feeding would lead to sagging of the breasts. This finding was similar to the results of another study which showed that 33% of Saudi female in AlHassa, Saudi Arabia believed that breastfeeding would spoil the mother's breasts and figure,<sup>25</sup> which reported the same misconception among Chinese mothers in Ireland,<sup>26</sup> although breastfeeding is not a significant risk factor for the development of sagging breasts.<sup>27</sup> Also, 27.3% of women in this study believed that sexual intercourse during pregnancy may cause abortion.

The result of this study showed that false belief scores were significantly associated with maternal educational level, as highly educated women had more false beliefs, but on other hand had more acceptance for correction of these beliefs after health education. This finding is interesting and may necessitate more research. This finding contradicts a previous study that found less educated women were more likely to report traditional practices.<sup>20</sup> One of the main results in this study is that most of the subjects did not receive all of the important information that should be given during ANC, as shown in Table 2 where level of education about many topics is below 50%. Most of them (78%) expressed satisfaction about the health education offered during ANC. Previous studies have also reported that most women expressed satisfaction with ANC.<sup>10,15,28</sup>

In this study, 66% of women reported that their main source of information about health education during ANC was from family or friends, while 53.7% reported that it was through ANC visits. In the culture of Saudi Arabia, most of the females were more comfortable discussing personal matters with friends or relatives. The results of a study in Karachi also revealed that the main source of information for participants was the same, namely, friends or relatives and obstetricians.<sup>29</sup> Saudi women in another study said that they normally get information from doctors, but that quite frequently, information is provided by nurses and not by doctors.<sup>10</sup>

**Limitations of the study.** As this study was carried out among the National Guard population which has its own specific characteristics, it will not be representative of the whole population of Saudi Arabia. We have also evaluated the quality of health education based on women's responses without considering the view of health professionals.

This study highlighted inadequate health education provided to pregnant women during ANC, and described various health beliefs and misconceptions related to pregnancy and puerperium. Awareness

should be enhanced by all available means through collaborative work to improve the quality of ANC, where mothers follow the recommended time of first visit and number of antenatal visits, health professionals be aware of cultural beliefs and practices, and consider a discussion on these beliefs as a part of health education during ANC with the use of appropriate counseling and education methods. Arabic speaking health educators at each center are highly needed for the counseling and education of pregnant women. Further research with a larger scale study sample, and different sites are needed to explore the quality of antenatal health education in Saudi Arabia.

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