

The Effect of Antenatal Education Programme on Maternal-foetal Outcomes in Hong Kong Chinese Women

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Objective:

To explore the relationship between the attendance of the designated antenatal education programme and the maternal-foetal outcomes for Chinese women in the obstetric unit of a regional hospital in Hong Kong.

Materials and Methods:

Retrospective correlational design was used. A maternal-foetal outcomes data collection form was developed to collect relevant data by case note review method.

Results:

Two hundred and seventy-two case notes were reviewed. The age of the sample ranged from 17 to 42 years, with a mean (standard deviation) age of 29.43 (4.52) years. Of them, 30 (11%) were in advanced maternal age, i.e., 35 years or above. Their height ranged from 145 to 172 cm, with a mean (standard deviation) height of 158.09 (5.19) cm. Ten (3.7%) of them were regarded as short stature, i.e., less than 150 cm in height. The body mass index ranged from 14.88 to 29.98, with a mean (standard deviation) of 20.76 (2.88). Eleven (4.0%) of them were underweight with body mass index below 17, and 25 (9.2%) were overweight with body mass index over 25. For their education level, 225 (82.7%) had at least secondary level (Form 4 to 5). Twenty-three (8.5%) of them were either single or cohabited. Most of them were working mothers. Only 72 (26.5%) were housewives. Eighty (29.4%) of them were under midwifery care.

Conclusion:

There were some significant differences in the clinical and psychosocial outcomes, but no significance in the fiscal outcomes when comparing the primiparae who attended and those who did not attend the designated antenatal education programme.

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Introduction

Midwife-led antenatal education programme was the most common source of information for Hong Kong Chinese women. Studies¹⁻³ showed that it was useful to the pregnant women in different aspects such as the preparation for the parenthood. However, its relationship with maternal-foetal outcomes was not reviewed. A retrospective correlational study was conducted to explore the relationship between the attendance of the designated antenatal education programme and the

maternal-foetal outcomes for Chinese women in the obstetric unit of a regional hospital in Hong Kong. This was an outcomes research exploring the effect of antenatal education programme on the maternal-foetal outcomes in a local context.

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Research Design

A retrospective correlational study was conducted to explore the relationship between the attendance of antenatal education programme and the maternal-foetal outcomes for Hong Kong Chinese women.

Instrument

A maternal-foetal outcomes data collection form was developed to collect relevant data by case note review method. Three topics of the antenatal education programme: (1) Labour Process, (2) Breastfeeding and Techniques, and (3) Emotion and Coping, were chosen for the study. It was because they were organised specifically to improve certain outcomes.

Urden⁴ had categorised the patient outcomes into clinical, psychosocial, functional, fiscal, and satisfaction. In this study, only the clinical, psychosocial, and fiscal outcomes were being examined. Clinical outcomes included duration of first stage of labour (cervix 3 cm to fully dilated), duration of second stage (cervix fully dilated to delivery), use of analgesia, integrity of perineum, morbidity and Apgar score of the baby (1-minute <6 and 5-minute <7, poor outcomes indicator for neonates). Psychosocial outcomes included Stein's Daily Scoring System (SDSS) score (Postnatal Emotion Assessment: Questionnaire I) obtained during hospitalisation on day 1 and before discharge; Edinburgh Postnatal Depression Scale (EPDS) score (Postnatal Emotion Assessment: Questionnaire II) attained about 6 weeks after delivery, either on the date of having postnatal checkup in the hospital, or by self-returned questionnaire in cases of women having their postnatal checkup done in maternal and child care centres; and the breastfeeding participation rate. Fiscal outcomes included the length of stay in the hospital after delivery. Other relevant data included the attendance of designated antenatal education programme (Labour Process, Breastfeeding and Techniques, and Emotion and Coping), demographic data like the antenatal care provider of the participants were also recorded.

Validity

A panel of three experts in midwifery care was invited to validate the maternal-foetal outcomes data collection form. The content validity index (CVI) was calculated. The sub-category CVI for the demographic

data, clinical outcomes, psychosocial outcomes, and fiscal outcomes were 0.92, 0.87, 1.00, and 0.83 respectively. The overall CVI was 0.91. The parameters of the data collection form were considered as relevant to the measurement of maternal-foetal outcomes.

Reliability

Reliability was established by using Cronbach's α test in the study. The overall α for the maternal-foetal outcomes data collection form was 0.61. The α was low because it was difficult to estimate the reliability of outcome measures through the use of classic measurement theory.

Setting

The study was conducted in the obstetric unit of a regional hospital in Hong Kong. The midwives in the antenatal clinic organised a session of antenatal education programme weekly on Saturdays for the pregnant women who received antenatal care from the unit. Topics of the programme include "Labour Process", "Postnatal Care", "Care of Newborn", "Breastfeeding and Techniques", "First Time Parenting", "Emotion and Coping", "Antenatal Nutrition", and "Postnatal Nutrition". The topics will be repeated every 2 months to accommodate the needs of women at different gestational age.

Sampling

Convenient sampling was used. The target population of the study was the Hong Kong Chinese primiparae who received antenatal care at or before 24 weeks of gestation and delivered their babies in the regional hospital under study from January to March in 2003. Primiparae were chosen in order to avoid the effect of contamination from previous birth experience. Antenatal care started before 24 weeks was set as criterion for inclusion because Amini et al⁵ notice that the adequacy of antenatal care can affect obstetric outcomes. Only Chinese pregnant women who possess Hong Kong Identity Card were included. The sample excluded those Chinese women who held valid two-way visa pass, expired two-way visa pass (overstayed), and illegally immigrated from China because these groups of women were prone to have inadequate antenatal care and support in local context due to their social status. Non-Chinese women were excluded so as to prevent the impact of cultural variation to the childbirth practice and outcomes. Women who had complication(s) that directly

affect the maternal-foetal outcomes during antenatal period such as twin pregnancy, breech presentation, gestational diabetes, placenta previa, pre-eclampsia, gestational hypertension, and psychiatric disorder, were excluded.

There were two self-selected groups of women: a control group of primiparae who did not attend antenatal education programme, and an experimental group who chose to attend at least one talk among the three designated topics of the programme: (1) Labour Process; (2) Breastfeeding and Techniques; and (3) Emotion and Coping.

Data Collection

Total population sampling was used in this study. All case notes of the sample that met the inclusion criteria were retrieved for data collection. Larger sample size was proposed so as to offset the effects of the confounding variables. Relevant data were collected by reviewing the case notes. The data were being verified and validated. The data were then recorded on the maternal-foetal outcomes data collection form.

Data Analysis

After checking and verification, the data were organised and coded. The Statistical Package for the Social Sciences version 11.0.1 for Windows XP was used for data analysis. Data analysis was carried out in two parts: descriptive and univariate analyses. Descriptive statistics were used to give the summary of the subjects. Univariate analysis was used to explore the effect of antenatal education programme on the maternal-foetal outcomes. Statistical significance for the tests was set at a probability (p value) of 0.05.

Results

Retrieval of case notes and data collection was started in early September 2003 after approval was obtained. Totally, 332 case notes were retrieved from the medical record office. However, 60 cases were excluded for the reasons of twin pregnancy, breech presentation, gestational diabetics, placenta previa, oligohydramnios, late-booked (those received antenatal care in the unit after 24 weeks) or non-booked cases (those received no antenatal care in the unit before), and pre-existing psychiatric illness. The sample size was 272 in total.

Descriptive Analysis

The age of the sample ranged from 17 to 42 years, with a mean (standard deviation [SD]) age of 29.43 (4.52) years. Thirty (11%) of them were in advanced maternal age, i.e., 35 years or above. Their height ranged from 145 to 172 cm, with a mean (SD) height of 158.09 (5.19) cm. Ten (3.7%) of them were regarded as short stature, i.e., less than 150 cm in height. The body mass index (BMI) ranged from 14.88 to 29.98, with a mean (SD) of 20.76 (2.88). Eleven (4.0%) of them were underweight with BMI below 17, and 25 (9.2%) were overweight with BMI over 25. For their education level, 225 (82.7%) had at least secondary level (Form 4 to 5). Twenty-three (8.5%) of them were either single or cohabited. Most of them were working mothers. Only 72 (26.5%) were housewives. Eighty (29.4%) of them were under midwifery care.

Univariate Analysis

After the preliminary data were obtained, the researcher recoded and ranked them into groups so as to facilitate the process of univariate analysis. Mann-Whitney *U* test was done to explore the relationship between the attendance of the designated antenatal education programme: (1) Labour Process, (2) Breastfeeding and Techniques, and (3) Emotion and Coping, and all the maternal-foetal outcomes. A $p < 0.05$ level was used as a criterion justifying a significant difference. No significant relationship was found between the fiscal outcomes when comparing the primiparae who attended and those who did not attend the designated antenatal education programme. However, the results did show some significant differences in some of the clinical and psychosocial outcomes (Table).

Discussion

The fiscal outcomes did not differ when comparing the attendance of the designated antenatal education programme. This might be due to the fact that clinical outcomes such as mode of delivery were influenced by many antenatal and intrapartum confounding variables that could not be controlled in this study. The clinical outcomes then affected the fiscal aspect in return.

However, some of the clinical and psychosocial outcomes did show significant difference when comparing with the attendance. The primiparae who attended the programme "Labour Process" had a longer first stage of labour ($U=4678.500$, $Z= -2.340$, $p=0.02$)

Table. Mann-Whitney *U* test for differences between the maternal-foetal outcomes and the attendance of the designated antenatal education programme

Outcomes	<i>U</i>	Mean rank attended	Mean rank not attended	<i>Z</i>	p value* (two-tailed)
Labour Process					
First stage of labour	4678.500	120.02	100.38	-2.340	0.02
Use of analgesia	7118.000	143.51	123.22	-2.112	0.04
Breastfeeding before discharge	6256.000	124.65	158.95	-4.152	0.00
Breastfeeding continued after 6 weeks	6595.000	126.55	155.34	-3.074	0.00
Breastfeeding and Techniques					
Use of analgesia	7805.500	147.21	128.54	-2.022	0.04
Breastfeeding before discharge	5500.000	105.91	159.21	-6.713	0.00
Breastfeeding continued after 6 weeks	7089.000	119.61	149.26	-3.270	0.00
Emotion and Coping					
Breastfeeding before discharge	3662.500	113.91	140.28	-2.352	0.02
Breastfeeding continued after 6 weeks	3366.500	106.32	141.55	-2.772	0.01

* Statistical significance $p < 0.05$

and received more pharmacological interventions for pain relief ($U=7118.000$, $Z= -2.112$, $p=0.04$). However, they also have a higher breastfeeding participation rate before discharge ($U=6256.000$, $Z= -4.152$, $p=0.00$) and after 6 weeks ($U=6595.000$, $Z= -3.074$, $p=0.00$). Those who attended “Breastfeeding and Techniques” were likely to have more pharmacological interventions for pain relief ($U=7805.500$, $Z= -2.022$, $p=0.04$) in addition to a higher breastfeeding participation rate before discharge ($U=5500.000$, $Z= -6.713$, $p=0.00$) and after 6 weeks ($U=7089.000$, $Z= -3.270$, $p=0.00$). For those who attended “Emotion and Coping”, the breastfeeding participation rate before discharge ($U=3662.500$, $Z= -2.352$, $p=0.02$) and after 6 weeks ($U=3366.500$, $Z= -2.772$, $p=0.01$) were higher as well.

The study showed that there was significant relationship between the attendance of the designated antenatal education programme and the breastfeeding participation rates as well as the SDSS score. As promoting breastfeeding and health promotion are the main roles and responsibilities for midwives, it is worthwhile to organise high-quality antenatal education programme so as to promote breastfeeding and prevent postnatal emotional disorder.

Limitations

As this was a retrospective study, it is impossible for the researcher to control the variables under study

because they had occurred already. The effects from other confounding variables could not be totally excluded, although the researcher had spent great effort in selecting subjects that were homogeneous.

Besides, the subjects themselves could choose whether to attend the antenatal education programme. Those who chose to attend might already be a group that was more concerned about their own health. This would definitely affect the outcomes. On the other hand, some subjects could be forced not to attend. There were some reasons. First of all, they could not participate if the quota for the programme was full. Or, they might be occupied by other activities on Saturday morning. But there was no other time slot to choose. Perhaps web-based information can be provided to facilitate information acquisition. This can be an alternative both for the working mothers and the lone mothers who are teenagers.

Nevertheless, only convenient sampling was used because randomisation of the sample was impossible in the retrospective study. Besides, as the sample was selected in a single regional hospital, results therefore could not be generalised.

Since there was only one researcher manned this project, longitudinal study could not be performed due to limitation of time. The administrative constraint on the retrieval of case notes was out of the control of the

researcher. The smaller sample size might weaken the statistical power to offset the effects of the confounding variables.

A retrospective correlational study was mainly to describe and explain the nature of the existing relationships. No prediction of effects could be concluded. The aim of the study was just to obtain the baseline measurements of the maternal-foetal outcomes. Many factors including the demographic characteristics could influence the outcomes. Some of them were difficult or even impossible to control. The cause-and-effect relationships of the antenatal education programme and the outcomes could not be established.

Recommendations

In order to be prepared for healthy childbirth and postpartum experience, pregnant women, especially primiparae, should acquire appropriate knowledge and skills in advance⁶. The pregnant women can obtain useful information related to childbearing and childbirth from midwives once they have started their antenatal visits. In general, antenatal education can be delivered in the form of the advice given during antenatal visits, the information booklets or pamphlets obtained, and the structured midwife-led antenatal education programme attended.

In addition to the effort and resources spent on the preparation and provision of the programme, it is recommended to pay more attention to monitor the quality of service⁷⁻¹³. As the maternal-foetal outcomes can be influenced and complicated by many other antenatal and intrapartum confounding variables, it is difficult to measure the effect of the antenatal education programme individually. However, prospective outcomes research on the effect of any health initiatives on the maternal-foetal outcomes using randomised sample is suggested in order to monitor the quality of care. The findings of the study may be used as a reference of the baseline measurement of the outcomes.

Outcomes management is an effective way for monitoring the quality of service^{9,14-16}. It is necessary for the health care managers to measure the patient

outcomes to obtain a baseline measurement initially and then periodically to monitor the service. Appropriate indicators for measurement are selected carefully in order to predict outcomes suitably. When there is a quality improvement initiative launched, a randomised control study, if possible, should be carried out. An in-depth analysis of the effect (short-term and long-term outcomes) can be done in terms of large-scale quantitative research study.

Moreover, proper documentation should be stressed to all health care workers. Any missing data due to improper documentation can result in the lost of valuable information for outcomes measurement. Without clear and precise documentation, the effectiveness of the nursing care provided is not recognised.

In general, Hong Kong Chinese women are more passive in seeking information and knowledge, unlike western women who are expected to read lots of books, magazines, and launched for internet information for preparing themselves for pregnancy and childbirth. The women are more aware of their own health and rights. As a midwife, acting as an advocate to facilitate the pregnant women to make informed choice¹⁷ is a key issue of midwifery care.

Furthermore, the development of cultural specific antenatal education for Hong Kong Chinese women is one of the future changes in midwifery care. As Chinese medicine becomes more popular in Hong Kong, the hospital-based antenatal education programme, which is based on western cultures and literatures, is expected to include some Chinese cultural traditions¹. However, many of these cultural traditions are only the experience passed on by the older generation and they are not proven by evidence yet. It is worthwhile for midwife to initiate studies for exploring the effect of these traditions on the maternal-foetal outcomes in order to develop evidence-based cultural specific antenatal education programme for local women. A transcultural study on the relationship of cultural traditions and maternal-foetal outcomes of women in different regions and ethnicities can be done to explore the impact of culture and tradition.

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