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Prenatal meditation influences infant behaviors

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ABSTRACT

Meditation is important in facilitating health. Pregnancy health has been shown to have significant consequences for infant behaviors. In view of limited studies on meditation and infant temperament, this study aims to explore the effects of prenatal meditation on these aspects. The conceptual framework was based on the postulation of positive relationships between prenatal meditation and infant health. A randomized control quantitative study was carried out at Obstetric Unit, Queen Elizabeth Hospital in Hong Kong. 64 pregnant Chinese women were recruited for intervention and 59 were for control. Outcome measures were cord blood cortisol, infant salivary cortisol, and Carey Infant Temperament Questionnaire. Cord blood cortisol level of babies was higher in the intervention group ($p < 0.01$) indicates positive health status of the newborns verifies that prenatal meditation can influence fetal health. Carey Infant Temperament Questionnaire showed that the infants of intervention group have better temperament ($p < 0.05$) at fifth month reflects the importance of prenatal meditation in relation to child health. Present study concludes the positive effects of prenatal meditation on infant behaviors and recommends that pregnancy care providers should provide prenatal meditation to pregnant women.

1. Introduction

Most doctors merely provide antenatal vitamins to pregnant women for the sake of maternal health and fetal health but not provide meditative intervention. Meditation is proven to be an excellent adjunctive treatment for many diseases (Mirams, Poliakoff, Brown, & Lloyd, 2013) but there is little information about prenatal meditative intervention on infant health. Recent research supports the effect of maternal and fetal programming in relation to child health (Dietro, 2012; Melchior et al., 2012). Cognitive functioning and behavioral problems in childhood have been shown to be inversely related to fetal health (Charil, Laplante, Vaillancourt, & King, 2010). Infants of depressed mothers have difficult temperament and attentional, emotional and behavioral problems later in life (Field, 2011). Prenatal maternal anxiety predicts reduced adaptive immunity in infants (O'Connor et al., 2013). Evidences confirmed the extension of the risk of psychiatric disorders associated with prematurity to the late preterm group, and suggest that maternal depression may play a key role in this risk trajectory (Rogers, Lenze, & Luby, 2013). Maternal life stress events in pregnancy linked to children's school achievement at age 10 years (Li et al., 2013). The aim of this study is to examine the effects of prenatal meditation in pregnant Chinese women in Hong Kong to infant behaviors. The conceptual framework is based on the hypothesis that meditation can enhance maternal health and improve fetal health and child health (McCoy et al., 2010). The author has developed an Eastern based meditative intervention (EBMI) for pregnant Chinese women in Hong Kong (Chan, 2010). The theoretical background of EBMI bases on the integration of

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Table 1
Contents of EBMI.

Mindful eating
Mindful walking
Mindfulness prenatal and postnatal exercises
Daily practice of 'self help, helping others'
Crisis intervention: turn curse into blessing
Daily practice of 'bliss'
Let go
Three minutes-breathing practice
Body scan
Mindful breathing
Four Immeasurables Meditation

Table 2
Validity of data from participants.

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Control group	56	31.3	31.3	31.3
	Intervention group	64	35.8	35.8	67.0
	Excluded (missing data)	59	33.0	33.0	100.0
	Total	179	100.0	100.0	

Table 3
No of patients with frequent practice (FP*) of EBMI.

Frequent practice of EBMI (FP)	36
Not frequent practice of EBMI (Not FP)	22
Missing data	6
Total no of patients in intervention group	64

* FP means practice EBMI more than 3 times per week.

mindfulness practice, the Four Immeasurables, cognitive therapies and Western psychology and psychotherapy. Contents of EBMI were listed in Table 1.

2. Materials and methods

Participants were pregnant Chinese women who attended private obstetrician clinics and antenatal clinics of Queen Elizabeth Hospital in Hong Kong (2007–2009). The present research had chosen one of the most common types of non-probability sample called convenience sample method. Chosen from a particular date onwards; any pregnant women who attended the clinics with maturity around twelve week to 28th week were invited to take part in the research. Sample size was based on statistical calculation. Participants were randomized placed into two groups, the intervention group and the control group. The intervention groups had six sessions which comprised of the elements of EBMI conducted by the researcher. The control group had only one session and was the introductory lecture for the intervention group without the elements of intervention.

The birth weight, maturity, Apgar score and cord blood for cortisol level of babies delivered were collected. Cortisol level in cord blood sample was chosen as a fetal health indicator (Bolten et al., 2013). Salivary cortisol levels of the infants were examined around six weeks and five months old (Cho, Carlo, Su, & McCormick, 2010). Mothers were asked to fill in the Carey Infant Temperament Questionnaire at around fifth month after delivery.

Data collected from questionnaires went through the process of coding. Descriptive statistics were used to summarize data. Chi-square analysis and independent *t*-tests were used to detect any significant differences between two groups on the baseline variables. Present research had formal approval from Research Ethics Committee (Kowloon Central/Kowloon East) of Hospital Authority of Hong Kong (2007).

3. Results

There are total 179 cases recruited for both intervention and control groups. Data collection was completed in October 2009. 64 cases have valid data from intervention group while 59 cases with valid data from control groups (Table 2). With data available about the frequency of practice of EBMI in intervention group, present study divides this group into two subgroups, those with Frequent Practice (FP) and not Frequent Practice (Not FP) (Table 3). Statistical analysis was also done between FP group and control group. Inter-group analysis between FP and Not FP was also made.

The demographic characteristics of the intervention group and control groups reveal no significant difference (Table 4). Obstetric outcomes are shown in Table 5. Some patients did not fill in the questions asked and lead to lot of missing data. The percentage of babies utilized Special Neonatal Care was lower in FP group than Not FP group ($p < 0.05$).

Results of cord blood cortisol of intervention and control groups are shown in Table 6. Missing data is due to difficulty in collecting of cord blood specimens. Cord blood cortisol level of babies delivered in intervention group was higher than that in the control ($p < 0.05$). Cord blood cortisol level of babies delivered in FP group was higher than that in the control ($p < 0.01$).