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The Effectiveness of Hypnosis Intervention for Labor: An Experimental Study

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Hypnosis has been shown to help pregnant women experience improved labor and postpartum periods. The present study compares the differences between experimental (n = 23) and control groups (n = 22) on specific variables measured both during labor and 24 hr postpartum. The participants in the experimental group received the hypnosis intervention at weeks 16, 20, 28, and 36 of pregnancy, while those in the control group received only routine antenatal care. The data collected at the labor stage describe the length of the labor stage, pain relief used during labor, the method of delivery, and the type of assisted vaginal delivery. Within 24 hr of delivery, data on neonatal birth weight, neonatal Apgar scores, and self-reported pain were obtained. The labor stage results showed no significant differences in the length of the second and third stages of labor. Although the participants in the experimental group reported higher pain levels immediately prior to, during, and immediately after delivery, their use of pethidine during labor was significantly lower than the control group participants. None of the experimental group participants opted for an epidural, and they had a greater number of assisted vaginal deliveries than the control group participants. The 24 hr postpartum results showed that the neonates of the experimental group participants had nonsignificantly higher Apgar scores than those of the women in the control group. Group differences in neonatal weight were not significant. The results of the present study indicate that hypnosis is useful for assisting pregnant women during labor and the postpartum period.

Keywords: hypnosis, labor, pregnancy

Introduction

Pregnant women adopt various strategies to reduce the psychological response to labor, particularly anxiety. These strategies include opting for an elective caesarean section (Peret, 2013). World Health Organization (WHO) worldwide statistics indicate that 18.5 million caesarean sections are performed yearly, and a large portion of these caesarean sections are unnecessary. The cost incurred by unnecessary caesarean sections was USD
2.32 billion worldwide in 2008 (WHO, 2010). Further, women who had caesarean sections reported having pain in addition to respiratory, breast, and musculoskeletal problems, and were more likely to report exhaustion, bowel problems, and sleep problems due to crying babies compared with women who had spontaneous vaginal deliveries (SVD; Thompson, Roberts, Currie, & Ellwood, 2002).

Hypnosis has been shown to reduce the rate of caesarean section delivery. Shah, Thakkar, and Vyas (2011) conducted hypnosis for pregnant women with oligohydramnios and intrauterine growth-restricted fetuses with the aim to relax the uterine muscles and improve placental circulation. Their results indicated that more women in the control group (who received only conventional medical treatment) had caesarean sections compared with women in the experimental group, who received conventional treatment and hypnosis. Similarly, a study conducted by Mehl-Madrona (2004) showed that women in the hypnosis group had fewer caesarean sections and fewer epidurals compared to women in the supportive psychotherapy and comparison group.

Psychotherapy has been shown to help women reduce their fear of childbirth and opt for SVD. Saisto, Toivanen, Salmela-Aro, and Halmesmäki (2006) found that psychotherapy sessions and group support were useful to women, resulting in 83% choosing natural birth for delivery. A total of 12.7% of the women in their study opted for caesarean sections due to fear, compared to 22.4% of those in the comparison group.

Seeking pain relief during labor is common for women undergoing both caesarean sections and SVD (Baker & Kenny, 2011). In the healthcare setting, various types of pharmacological relief are available during labor, including the use of opiates such as pethidine, Entonox, epidural analgesia, and spinal anesthesia. Although these pain relief methods are safe, they are associated with certain side effects. For example, pethidine may cause drowsiness, Entonox may cause nausea, and epidurals may cause prolonged second stage labor and neonatal respiratory distress (Baker & Kenny, 2011; British Columbia Perinatal Health Program, 2007).

Fetal complications, such as slow fetal heart rate, and maternal complications, such as prolonged labor in the second stage (Unzila & Norwitz, 2009), have led physicians to use instruments to assist with delivery. The current instruments available include the ventouse, or vacuum extractor, and forceps.

The use of forceps increases the risk of maternal morbidity, including the risk of injuries to the perineum (the area between vulva and anus), pain in the perineum, blood loss due to injuries, and urinary incontinence, while vacuums increase injuries to the neonate, such as lacerations of the scalp and intracranial hemorrhage or blood accumulation in the cranium (Unzila & Norwitz, 2009; Vacca, 2006).

The problems caused by assisted vaginal delivery cause some women to experience less positive postpartum outcomes, including problems with breastfeeding, fatigue, and sutures from labor, causing pain, painful intercourse, backache, depression, anxiety, and sleep problems, as well as flashbacks of the events that occurred during labor (Henderson & Redshaw, 2013).
It has also been reported that at 1 month postpartum, 17% of the women who had an assisted vaginal delivery via forceps experienced anxiety and 11% experienced depression. At 3 months postpartum, they were also more likely to report having symptoms of post-traumatic stress disorder (PTSD), fatigue, difficulties with breastfeeding, and anxiety (Henderson & Redshaw, 2013; Rowlands & Redshaw, 2012).

Nonpharmacological methods of pain relief, such as relaxation techniques, can reduce anxiety and increase pain tolerance during labor, thus reducing the use of pharmacological pain relief (Brown, Douglas, & Flood, 2001; Hughes et al., 2009).

Hypnosis, with its focus on breathing and relaxation techniques, is suitable for labor preparation and results in positive labor outcomes, such as those shown in the study conducted by Mehl-Madrona (2004), wherein the participants in the hypnosis group had less complicated births in terms of decreased caesarean sections, inductions, neonatal resuscitations, epidurals, and analgesia than the participants in the supportive psychotherapy and no contact comparison groups. The hypnosis study by Shah et al. (2011) showed that a total of 70% of the neonates of the mothers in the experimental group were born full-term, with 60% of them having a birth weight of at least two kilograms, and only 25% of the neonates of the mothers in the control group had full-term neonates, with 20% of them having a birth weight of at least two kilograms in the control group.

Other studies using hypnosis as a relaxation technique have supported the findings of Mehl-Madrona. These studies include Cyna and McAuliffe (2006), who investigated the birth outcomes of women who were taught self-hypnosis. They provided additional data on the outcomes of hypnosis during labor and reported the following findings: A total of 8% of the nulliparous and 7% of the multiparous women in the experimental group had elective caesarean sections compared with 4% of the nulliparous and 15% of the multiparous women in the control group; 16% of the nulliparous and 11% of the multiparous women in the experimental group had emergency caesareans compared with 22% of the nulliparous and 9% of the multiparous women in the control group; 58% of the nulliparous and 82% of the multiparous women in the experimental group had SVD compared to 51% of the nulliparous and 69% of the multiparous women in the control group; 12% of the nulliparous and 15% of the multiparous women in the experimental group had SVD and epidural compared to 20% of the nulliparous and 20% of the multiparous women in the control group. Their results are comparable to those of Harmon, Hynan, and Tyre (1990), who associated hypnosis with shorter stage one labor, neonates with higher Apgar scores at both 1 and 5 min, increased SVD, and decreased medication. In contrast, the control group participants used relatively more tranquilizers, narcotics, and oxytocics.

Our study compares the differences of the experimental and control groups with respect to: (1) specific variables measured during labor—the length of second stage labor, the length of third stage labor, the use of pain relief during labor, delivery method, and type of assisted vaginal delivery; and (2) specific variables measured at 24 hr postpartum—neonatal birth weight, Apgar score at 1 min postpartum, Apgar score at 5 min postpartum, and self-reported pain (immediately prior to, during, and immediately after delivery).
Methods

Participants

The participants in this study consisted of pregnant women recruited from a teaching hospital in Kuala Lumpur, Malaysia who were in their second trimester, above the age of 18, and able to read and understand either English or Malay (Malaysian national language). During the recruitment phase of the study, the participants in both the experimental and control groups were matched for parity (multiparous and nulliparous). The baseline data indicated that the experimental group consisted of 28 pregnant women aged 23 to 36 ($M = 28.23$, standard deviation [SD] = 3.12), and the participants in the control group consisted of 28 pregnant women aged 25 to 34 ($M = 29.28$, SD = 2.65). At the final time point of the study (time point 3), the number of participants in each group had decreased to 23 (Beevi, Low, & Hassan, 2016).

A total of 23 experimental group participants and a total of 22 control group participants (one participant opted to give birth at another hospital) were included in the labor stage data collection. The mean age difference between the experimental and control groups during the labor stage was not significant [$t(43) = -1.240$, $p = 0.222$]. A total of 69.6% of the participants in the experimental group and 63.6% of the participants in the control group had a college or university education. The majority of the experimental (95.7%) and control group participants (90.9%) were employed. A total of 52.2% of women in the experimental group had previously given birth compared with 45.5% of the women in the control group, and 47.8% of the participants in the experimental group experience their first birth compared with 54.5% of those in the control group. Women in both groups were married (Table 1). Data collection at week 36 of pregnancy, prior to delivery showed that the experimental group had lower stress, anxiety, and depressive symptoms as compared to the participants in the control group (Beevi et al., 2016).

Materials

Labor and Delivery Data

The data collected during labor and delivery consisted of the duration of the second and third stages of labor (in minutes), whether or not pethidine and/or epidural analgesia were used as pain relief during labor, assisted vaginal delivery methods (i.e., the use of forceps and/or vacuums), and delivery method (i.e., vaginal or opting for an elective caesarean section).

Neonatal Assessment Data

The neonatal assessment data consisted of birth weight and two Apgar scores. Birth weight was classified as low birth weight (lower than 2,500 gm), middle-range birth
weight (from 2,500 to 4,000 gm) and high birth weight (greater than 4,000 gm; Boo, Lim, Koh, Lau, & Ravindran, 2008; Shittu et al., 2008). Apgar scores were measured at 1 and 5 min postpartum.

**Pain Description Data**

The pain description data consisted of self-reported pain, both in English and Bahasa Malaysia. Self-reported pain was measured via three separate scales at three time points: immediately prior to, during, and immediately after delivery. A visual analog pain scale was developed for this study, which consisted of visual analog scales ranging from 0 (no pain) to 10 (excruciating pain; Appendix A).

**Design and Procedure**

The current study utilized a pretest–post-test quasi-experimental design with experimental and control groups. The participants were recruited from an antenatal clinic at a teaching hospital at week 12 of pregnancy. The participants who met the inclusion criteria for the study were asked about their interest in participating in a hypnosis study. The participants were briefed on the nature of hypnosis and its benefits, which was included in the participant information sheet. For example, participants were informed that hypnosis has been shown as an effective way of assisting women during pregnancy and childbirths, resulting in positive outcomes, such as reduction in anxiety associated to childbirth, lowering the use of

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Experimental Group (n=28)</th>
<th>Control Group (n=28)</th>
<th>p value</th>
</tr>
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<tbody>
<tr>
<td>Mean age (years)</td>
<td>28.00 (SD = 3.12)</td>
<td>29.28 (SD = 2.65)</td>
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</tr>
<tr>
<td></td>
<td>N (%)</td>
<td>N %</td>
<td></td>
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<tr>
<td>Educational level</td>
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<td></td>
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<tr>
<td>Secondary school</td>
<td>7 (30.4)</td>
<td>8 (36.4)</td>
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<td>College/University</td>
<td>16 (69.6)</td>
<td>14 (63.6)</td>
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<td></td>
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<tr>
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<td>22 (95.7)</td>
<td>20 (90.9)</td>
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<tr>
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<td>2 (9.1)</td>
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<tr>
<td>Parity</td>
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<td></td>
</tr>
<tr>
<td>Nulliparous</td>
<td>11 (47.8)</td>
<td>12 (54.5)</td>
<td>0.65</td>
</tr>
<tr>
<td>Multiparous</td>
<td>12 (52.2)</td>
<td>10 (45.5)</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>23 (100.00)</td>
<td>22 (100.00)</td>
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</tr>
</tbody>
</table>
pain relief during labor, and lowering the incidence of intervention through surgery. Hypnosis also aids in faster wound healing during the post-delivery period.

Informed consent was given following agreement from the pregnant women to participate in the study, prior to their first hypnosis session. The participants who declined to participate in the hypnosis sessions were invited to be included in the control group. Consent was obtained from the control group participants, followed by their completion of questionnaires at week 16 of pregnancy.

Data collection. The first author of this paper, who is trained in clinical hypnosis (London), conducted the hypnosis sessions for the participants in the experimental group. The pregnancy stage data were collected at four time points (weeks 16, 20, 28, and 36 of pregnancy). At each time point, the participants in the experimental group were given an individual hypnosis session and asked to complete the Depression Anxiety Stress Scale-21 (DASS-21; Lovibond & Lovibond, 1995) to measure their psychological symptoms along with the Pregnancy Symptoms Checklist (Beevi et al., 2016) to assess their physical symptoms. At each time point, the participants in the control group completed the DASS-21 and Pregnancy Symptoms Checklist. The participants in the control group did not receive a hypnosis intervention; however, they did receive routine antenatal care provided by the antenatal clinic. This routine antenatal care, which is provided to all the pregnant women at the teaching hospital, consisted of training in breathing exercises, a healthy diet, and back massage for relaxation. Data pertaining to the psychological and physical symptoms were included in the previous publication (Beevi et al., 2016).

The participants in the control group were offered four hypnosis sessions following the completion of this study at 2 months postpartum. However, none of the control group participants accepted the offer.

Hypnosis Intervention

The intervention consisted of four hypnosis sessions focused on reducing physical and psychological symptoms and increasing muscle relaxation for a positive experience of labor and the postpartum. In addition, the third and fourth sessions incorporated direct suggestions regarding a positive experience of labor and postpartum (e.g., reduction of discomfort during labor and positive bonding of the women with their newborn babies), including orientating the participants to the future by asking them to imagine being in labor in the hospital and the time following the completion of labor. Various modalities (e.g., visual and kinesthetic) were used to strengthen the direct suggestions. All participants received the same hypnosis induction, deepening, post-hypnotic suggestions, and ego strengthening, in the effort to ensure some forms of standardization (Appendix B).

The participants were advised to do self-hypnosis every day. During the hypnosis intervention at the first session meeting, prior to re-alerting participants, self-hypnosis suggestions were included. Upon re-alerting participants from hypnosis, they were
asked to do their own hypnosis in the presence of the researcher. The teaching of self-hypnosis was done on an individual basis. Participants were asked to conduct self-hypnosis at home; every evening before bedtime until they were hospitalized for labor. Phone calls were initiated to ensure that participants practice self-hypnosis at home. Participants were also asked about their practiced of self-hypnosis during follow-up hypnosis sessions.

**Procedure During the Labor Stage and the 24 hr Postpartum**

Information pertaining to labor and the neonatal assessments were obtained from hospital medical records. The self-reported pain scale (immediately prior to, during, and immediately after delivery) was completed by participants at 24 hr postpartum.

**Results**

**Statistical Analysis**

The data were examined for normal distributions using both residual testing and the Shapiro-Wilk test. The independent-samples \( t \)-test was performed to determine group differences for the continuous dependent variables, and the Chi-square test for association was performed for the categorical dependent variables.

**Variables Measured During Labor**

There were nonstatistically significant differences in the length of second stage labor, \( t(31) = -0.312, p = 0.611 \), and \( d = 0.18 \). The results indicated that there were nonstatistically significant differences in the length of third stage labor, \( t(31) = -1.254, p = 0.219 \), and \( d = 0.15 \) (Figure 1).

A total of 22.7% of the participants in the experimental group were given pethidine compared with 52.2% of those in the control group, and these differences were significant, \( \chi^2 (1, N = 23) = 3.879, p = 0.049, \phi = 0.311 \). Meanwhile, the group differences in epidural used during labor \( (p = 0.471, \text{Fisher’s exact test}), \) forceps-assisted labor \( (p = 0.471, \text{Fisher’s exact test}) \) and vacuum-assisted labor \( (p = 0.164, \text{Fisher’s exact test}) \) were not significant. Frequency distributions indicate that, within group, 4.3% of the participants in the control group received an epidural compared with none of those in the experimental group. Of the participants in the control group, a total of 4.3% underwent forceps-assisted labor compared with none of those in the experimental group. Meanwhile, 17.4% of the participants in the control group had vacuum-assisted labor compared with 4.5% of those in the experimental group (Table 2).

Chi-square tests showed no significant associations between types of group (experimental and control) and the methods of delivery, \( \chi^2 (1, N = 45) = 2.070, p = 0.150 \),
$\varphi = 0.214$. A total of 42.2\% of the participants in the experimental group had SVD compared with 31.1\% of those in the control group, and 8.9\% of the participants in the experimental group had caesarean sections compared with 17.8\% of those in the control group. The caesarean sections for the participants in the experimental group were performed due to gestational diabetes mellitus, fetal macrosomia (4 kg birth weight), and placental abruption (due to a fall). The caesarean sections for the participants in the control group were performed due to labor induction failure, participant request, poor progression of labor, and pregnancy-induced hypertension (Table 3).
Variables Measured at 24 hr Postpartum

The neonates of the participants in the experimental group had higher birth weights (3103.48 ± 301.18 grams) than the neonates of those in the control group (3070.91 ± 367.24 grams). However, this difference was not statistically significant given that \( t(43) = 0.326, p = 0.746, \) and \( d = 0.10 \) (Table 4).

There were nonstatistically significant differences in the Apgar scores at 1 min postpartum (\( p = 0.489, \) Fisher’s exact test). A total of 4.3% of the participants in the control group and none in the experimental group had neonates with Apgar scores of 5 and 6, 18.2% of the participants in the control group had neonates with an Apgar score of 8 compared with 4.3% of those in the experimental group, and 95.7% of the neonates in the experimental group had an Apgar score of 9 compared with 72.7% of those in the control group (Figure 2). Meanwhile, at the 5thmin postpartum, The differences in the Apgar scores between the two groups were not significant (\( p > 0.05, \) Fisher’s exact test). A total of 4.5% of the participants in the control group had neonates with an Apgar score of 9 in contrast to none in the experimental group, and all of the neonates in the experimental group had an Apgar score of 10 compared with 95.5% of those in the control group (Figure 3).

There were nonstatistically significant differences in self-reported pain immediately prior to delivery between the experimental and the control groups, \( t(39) = 1.322, p = 0.194, d = 0.41. \) The experimental group experienced greater pain during delivery (5.49 ± 2.48) than the control group (3.42 ± 1.90), and this difference was statistically

<table>
<thead>
<tr>
<th>Groups</th>
<th>n</th>
<th>Mean (SD)</th>
<th>t</th>
<th>df</th>
<th>p value</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>23</td>
<td>3103.48 (301.18)</td>
<td>.326</td>
<td>43</td>
<td>.746</td>
<td>0.10</td>
</tr>
<tr>
<td>Control</td>
<td>22</td>
<td>3070.91 (367.24)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Weight is in grams.
significant given that $t(39) = 3.020$, $p = 0.004$, $d = 0.94$. There were nonstatistically significant differences in self-reported pain immediately after delivery between the experimental and control groups, $t(39) = 0.586$, $p = 0.561$, $d = 0.19$ (Figure 4).

Discussion

Our study examined the differences between experimental (hypnosis) and control groups in specific variables measured during labor, including labor stage duration, the use of pain relief during labor, delivery method, and the use of assisted vaginal delivery. Our study also compared the differences between experimental and control groups on specific variables...
measured at 24 hr postpartum, including Apgar scores at 1 and 5 min postpartum and self-reported pain immediately prior to, during, and immediately after delivery.

**The Length of Labor Stages**

Our results regarding the differences between the experimental and control groups with respect to the duration of the second and third stage of labor were not significant. However, the participants in the experimental group experienced a shorter duration of the second and third stage of labor than those in the control group.

Madhavanprabhakaran, Kumar, Ramasubramaniam, and Akintola (2013) found that anxiety is linked to prolonged labor. In this study, a greater number of women with high anxiety during the third trimester requested caesarean sections. A total of 93% of the women experienced severe childbirth anxiety in the third trimester, an increase from 42.4% in the first trimester.

**Pain Relief During Labor**

The participants in the experimental group used less pain relief (12.5%) than those in the control group (30%). Although the group differences in the use of epidurals were not significant, none of the participants in the experimental group opted for an epidural compared with 2.9% of those in the control group. Brown and colleagues (2001) survey
on nonpharmacological pain relief techniques during labor indicated that women found breathing and relaxation techniques to be effective methods of pain relief.

Assisted Vaginal Deliveries

None of the experimental group participants in the present study had forceps-assisted delivery compared with 2.9% of those in the control group. A total of 2.9% of the participants in the experimental group had vacuum-assisted delivery in contrast to 11.8% of those in the control group. Rowlands and Redshaw (2012) found that women who had assisted vaginal delivery experienced anxiety and depression at 1 month postpartum and were relatively more likely to report symptoms of PTSD at 3 months postpartum. These women were also more likely to experience fatigue, difficulties in breastfeeding, and symptoms of anxiety.

Methods of Delivery

Our results showed that 41.9% of the participants in the experimental group had spontaneous vaginal delivery (42.2%) compared to 31.1% of those in the control group. A total of 8.9% the experimental group had caesarean sections, as did 17.8% of the control group. Depression late in the third trimester has been associated with epidural use during labor and the caesarean section method of delivery in lieu of SVD (Chung, Lau, Yip, Chiu, & Lee, 2001). The data on the psychological symptoms of the present study, published earlier (Beevi et al., 2016) indicated that in the third trimester, the participants in the control group had higher levels of depression than those in the experimental group.

As discussed previously, a greater number of women in the control group had caesarean deliveries and higher levels of stress, anxiety, and depression compared with those in the experimental group (Beevi et al., 2016). Saisto et al. (2006) emphasized that treating labor fear and anxiety can help reduce these psychological symptoms.

The experimental group participants in the present study had fewer caesarean sections than those in the control group, had no elective caesareans, had only one vacuum-assisted delivery, used less pethidine than those in the control group, and did not use epidural analgesia. The hypnosis, which aimed to increase their physical and psychological well-being, may have given them a sense of control and confidence about the labor process. Indeed, Abbasi, Barlow-Harrison, and Mohammadyari (2009) found that the participants in their study were satisfied with their hypnosis sessions and felt that they gave them a sense of control. They also felt that hypnosis decreased their fear and anxiety during labor, and they experienced a relatively shorter duration of labor and felt less fatigued during labor. None of the participants in the Abbasi et al. (2009) study requested pain relief. This supports the findings of Schauble, Werner, Rai, and Martin (1998), who emphasized that patients exposed to hypnosis had a sense of control over
their labor and delivery, resulting in increased relaxation and confidence. Compared with women who are not exposed to hypnosis, these patients generally do not require pain relief medications, have fewer complications, have a greater number of normal and full-term deliveries, and are better adjusted during the postpartum period.

**Birth Weight and Apgar Score**

Our results show that the neonates of the women in the experimental group had higher Apgar scores than those of the women in the control group at 1 and 5 min of birth. Berle, Mykletun, Daltveit, Rasmussen, Holsten, and Dahl (2005) found that, although anxiety and depression were not related to preterm birth and birth weight, the neonates of women with anxiety disorders had relatively lower Apgar scores at 1 and 5 min of birth. In this study, anxiety disorders during pregnancy resulted in neonates with Apgar scores of less than 8 at 1 and 5 min of birth.

**Self-Reported Pain**

In the present study, there were no significant group differences in self-reported pain immediately prior to labor. However, the differences in self-reported pain during labor were significant, with the experimental group experiencing significantly higher pain levels than the control group. A similar trend was apparent in self-reported pain immediately after labor; although the differences were not significant, the experimental group experienced slightly higher pain levels than the control group. In contrast, previous studies such as that conducted by Harmon et al. (1990) have found that treatment with hypnosis results in an experience of less pain during labor. Even though the experimental group participants in the present study reported more intense labor pain than those in the control group, they used less pain relief during labor and also experienced less depression and anxiety. It is possible that the participants in the control group, due to increased anxiety, depression, or stress (Beevi et al., 2016), felt relatively higher pain that those in the experimental group, and therefore, opted for pain relief. This is supported by other studies showing that increased depressive and anxiety symptoms are associated with labor pain (Alder, Fink, Bitzer, Hosli, & Holzgreve, 2007).

The present study lacks data regarding the specific anxiety or fear related to labor and childbirth. There was a possibility that participants in the experimental group had high anxiety or fear over labor. The higher pain levels experienced by the experimental group could also be due to other probable factors, such as hypnotizability level, the method of teaching self-hypnosis that was taught to the women, and noncompliance with self-hypnosis practice. Hypnotizability levels were not assessed in the present study, and some of the women who had experienced higher anxiety over labor and childbirth might have had low levels of hypnotizability. Self-hypnosis was taught to the expectant mothers during the first session at week 16 of pregnancy, and the compliance with
self-hypnosis was checked verbally during telephone calls and subsequent hypnosis sessions; however, the compliance level may be low or the women may have not done the self-hypnosis everyday as required by the study.

**Implications**

The present study offers evidence that incorporating a hypnosis intervention in an obstetrics setting has beneficial implications for pregnant women, their growing fetuses, positive neonatal outcomes, and introducing hypnosis as an adjunct to the management of women’s health.

First, hypnosis intervention assists in increasing pregnant women’s psychological and physical well-being. Decreasing these symptoms, particularly anxiety, helps women to have a positive expectation for their labor and postpartum. The current obstetrics healthcare system primarily monitors women’s physical well-being, particularly changes in blood pressure and blood sugar levels, as changes in these can be detrimental to the physical well-being of pregnant women and their fetuses. The present study suggests that it is also essential to quantify and monitor women’s psychological well-being early in pregnancy, as it also affects their physical well-being during pregnancy, labor, and postpartum. This early identification could warrant further nonpharmacological interventions, such as hypnosis, for helping women to better cope during pregnancy, thus having better labor and postpartum experiences.

Second, the present study provides evidence supporting an additional form of treatment, one pertinent in the development of the future management of pregnancy, labor, and postpartum, which, in itself, is a cost benefit to the healthcare system (such as reduction in the use of pain relief medications and caesarean section). As shown here, hypnosis can be an adjunct in the management of pregnancy, not only as a treatment of pregnancy-related conditions, but also as a preventive measure to ensure that women’s psychological and physical well-being are at their optimum. As the old adage says, “prevention is better than cure.”

**Limitations**

The limitations of the study include its small number of participants, long gaps between time points, and fewer hypnosis sessions.

Due to the small number of participants during the labor stage, the number of participants in the experimental and control groups were reduced to 23 and 22, respectively, as a result of one withdrawal. This small number of study participants may not reflect the true findings.

First, the hypnosis sessions in the present study were conducted four times, which was adequate for management during pregnancy, but these sessions were conducted with a long gap between them. There was a gap of 1 month between the first and second
session, a gap of 2 months between the second and third sessions, and a gap of 2 months between the third and the fourth sessions. Although the hypnosis sessions may have aided participants in the experimental group in the alleviation of the antenatal physical and psychological symptoms, these long gaps may not have helped in answering the research questions on labor and postpartum-related matters, such as the alleviation of labor pain, as preparation for labor should be done closer to the date of delivery (Barabasz & Watkins, 2004). The reason for the length of the gaps was that the women were only willing to participate in the hypnosis sessions if they were to be conducted in conjunction with their visits to the antenatal clinic for their obstetrics appointments, which were at weeks 16, 20, 28, and 36. For future research, there is a need to encourage a shorter gap between sessions, as well as more hypnosis sessions, of which a few sessions should be conducted early in the trimesters to alleviate psychological and physical symptoms and a few sessions conducted toward the end of the third trimester to prepare for labor and postpartum. This may increase the practice effect of hypnosis and the mothers’ abilities to benefit from hypnosis during labor and delivery.

Second, the study lacked an assessment of the experimental group’s level of hypnotizability. Although past studies had indicated that pregnant women experienced higher levels of hypnotizability as compared to nonpregnant women (Alexander, Turnbull, & Cyna, 2009), inclusion of the hypnotizability assessment may have explained significantly higher self-reported pain during labor for the experimental group.

Third, the measurement of fear or anxiety over labor was not measured in the present study. Even though the participants in the experimental group had lower anxiety symptoms in comparison to the control group participants, they may have had high anxiety about labor, especially at the time very close to labor. This is supported by previous studies, such as Alipour, Lamyian, Hajizadeh, and Vafaei (2011), indicating a significant association between trait and state anxiety and childbirth fear at weeks 28 and 38 of pregnancy in first-time mothers. Madhavanprabhakaran et al. (2013) have concurred that first time mothers had experienced severe childbirth anxiety. Future researchers are encouraged to investigate fear or anxiety specific to labor or childbirth, as this may increase studies’ significance, and to explore this anxiety or fear separately between the nulliparous (first-time mothers) and multiparous women (had previously given birth).

Conclusions

The present study offers evidence that incorporating hypnosis intervention in an obstetrics setting had beneficial implications for pregnant women and their growing fetuses. The results of this experimental study showed that group differences in the length of the second and third stages of labor were not significant. More participants in the control group were given epidurals, had experienced assisted-vaginal delivery, and delivered via
caesarean sections. The results indicated that the experimental group had a slightly higher mean neonatal birth weight and higher Apgar score. The results also showed that despite experiencing higher pain levels during labor, a smaller number of the experimental group participants had opted for pain relief. The findings offer evidence that in addition to routine antenatal care by healthcare professionals (i.e., obstetricians and nurses), hypnosis can be utilized as a nonpharmacological option for assisting women to have better labor and postpartum experiences. To further strengthen the effectiveness of hypnosis in obstetrics, more studies should be conducted to give direction to women and healthcare policy makers in including hypnosis, a relatively safe procedure, in women’s healthcare in order to improve the well-being of women during pregnancy, labor, and postpartum.

Acknowledgments

We acknowledge the assistance of Obstetrics and Gynaecology clinic, University of Malaya Medical Centre in the recruitment of study participants. This study was approved by the University of Malaya Medical Ethics Committee, Kuala Lumpur, Malaysia (Medical Ethics Committee Reference No: 901.5). Written consent was obtained from all participants, as required by the Medical Ethics Committee.

Funding

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References


Appendix A

Part 1: First Stage Labor (Immediately Prior to Delivery)

Please mark on the section of the scale MOST accurately describes your first stage labor experience (immediately prior to delivery)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Pain</td>
<td>Excruating Pain</td>
</tr>
</tbody>
</table>

Part 2: Second Stage Labor (During Delivery)

Please mark on the section of the scale MOST accurately describes your second stage labor experience (during delivery)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Pain</td>
<td>Excruating Pain</td>
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</tbody>
</table>

Part 3: Third Stage Labor (Immediately After Delivery)

Please mark on the section of the scale MOST accurately describes your third stage labor experience (immediately after delivery)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
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<tbody>
<tr>
<td></td>
<td>No Pain</td>
<td>Excruating Pain</td>
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</tbody>
</table>

Appendix B

Details of the Hypnosis Intervention

Sessions one and two

Sessions one (week 16 of pregnancy) and two (week 20 of pregnancy) focused on reducing physical and psychological symptoms and increasing muscle relaxation. Participants were asked to bring their thumbs and index fingers together, using either the right or left hand. Following eye closure, participants were guided through an induction that consisted of progressive muscle relaxation, which was based on Hartland’s hypnotherapy training (Hartland, 1977). The muscle relaxation at the feet, followed by the ankles, moving up to the legs, hips, abdomen, chest, throat, face, and down to the shoulders, arms, and hands. The progressive muscle relaxation was designed to include all the major muscles, so as to help women who were experiencing various physical symptoms, for example, the relaxation of chest muscles helped with calm and relaxed breathing, and the relaxation of throat muscles helped with vomiting. The progressive muscle relaxation was followed by suggestions for symptom alleviation and elimination. The suggestions given were:

Every time you breathe out, the discomfort you experienced during this pregnancy will move down your arm to your thumb and index finger and leave your body. That discomfort is replaced by the feeling of comfort…feeling of pleasure…feeling of satisfaction…allowing you to enjoy your pregnancy in a state of deep and complete relaxation (Beevi, Low, & Hassan, 2015).
Hypnosis was concluded with ego strengthening, based on Hartland’s hypnotherapy training (Hartland, 1977), which was originally aimed at improvement of psychological well-being and adapted for this study to include positive pregnancy experience, mother-baby bonding, and positive expectations of birth. Here is an example of the ego strengthening script:

You are enjoying your pregnancy with a greater feeling of well-being...looking forward to your delivery...holding your baby in your arms...the baby whom you are nurturing now...whom you are loving now...just imagine how wonderful it is to hold this precious being in your arms...and as you think of this...you feel a greater sense of relaxation and joy.

**Sessions two and three**

The focus on symptom alleviation and elimination continued during sessions three, which was at week 28 of pregnancy, and four, at week 36 of pregnancy, with an additional inclusion of the childbirth preparation script adapted from Barabasz and Watkins (2004). The script for these sessions included direct suggestions for increasing relaxation and reducing fear, alleviating the pain sensation, increasing the sense of relaxation, and alleviating discomfort during labor. Faster physical healing, increased energy, and bonding between mothers with their babies at postpartum was emphasized. An example of the childbirth preparation script:

The physical healing from your birth will take place immediately and rapidly...and as the healing continues...you feel more relaxed...more calm...mentally and emotionally...allowing you to bond with your baby...to nurture your baby...keeping yourself and your baby healthy and well.