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The Use of Hypnosis in Labor and Delivery: A Preliminary Study

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ABSTRACT

Self-hypnosis was taught to 87 obstetric patients (HYP) and was not taught to 56 other patients (CNTRL), all delivered by the same family physician, in order to determine whether the use of self-hypnosis by low-risk obstetric patients leads to fewer technologic interventions during their deliveries or greater satisfaction of parturients with their delivery experience or both. The outcomes of the deliveries of these two groups were compared, and the HYP group was compared to 352 low-risk patients delivered by other family physicians at the same hospital (WCH). Questionnaires were mailed postpartum to 156 patients, all delivered by the same family physician, to determine satisfaction with delivery using the Labor and Delivery Satisfaction Index (LADSI). The hypnosis group showed a significant reduction in the number of epidurals (11.4% less than CNTRL and 17.9% less than WCH, $p < 0.05$) and the use of intravenous lines (18.5% less for both, $p < 0.05$). The number of episiotomies was significantly less in the HYP group compared to WCH (15.9%, $p < 0.05$) and 11.5% less when compared to CNTRL. The tear rate was not statistically different. Combined use of the intervention triad (epidural–forceps–episiotomy) was less for HYP than for CNTRL (15.8% less) and WCH (10.2% less, $p < 0.05$). More deliveries were done in the labor room with HYP than CNTRL (21%, $p < 0.05$). The second stage was shortened by 10 min (HYP vs CNTRL). Overall satisfaction of HYP and CNTRL patients was similar and generally favorable.

INTRODUCTION

AN IMPORTANT ISSUE IN FAMILY-CENTERED MATERNITY CARE concerns maintaining a balance between assisting a natural process, administered in a caring environment, and the ready availability and appropriate use of advanced technology in obstetrics. Reid et al.[1] showed that intervention rates are lower for family physicians than for obstetricians delivering low-risk patients in three downtown teaching hospitals. The increased intervention rate for obstetricians was not associated with improved maternal or neonatal outcomes.

Over the years, many physicians have used hypnosis as an obstetric intervention, studying its effect on labor and delivery.[2–8] Currently, patients expect more information, control, and sharing of the decision-making process regarding their health care. Concurrent to this, there has been an increase in

teaching self-hypnosis, placing control back into the hands of patients.[9–12]

In this study, we wanted to determine whether the use of self-hypnosis by patients further decreased the obstetric intervention rate, particularly with respect to epidurals. We also wanted to determine whether the use of self-hypnosis was associated with an increase in the number of spontaneous vaginal deliveries. Finally, we wanted to determine whether teaching patients relaxation and pain control increased their overall satisfaction with their deliveries.

SUBJECTS AND METHODS

The total number of obstetric patients seen by the hypnotist/accoucheur from January 1985 to November 1989 was 156.

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Patients were offered hypnosis early in their pregnancies. Those patients who opted to learn self-hypnosis were instructed at 32 and 34 weeks gestation in two 90-min sessions. At the first session, the pregnant woman was counseled about the use of epidurals, forceps, and episiotomies. She was then taught relaxation through self-hypnosis, and obstetric imagery was introduced.* At 34 weeks, the couple was seen together and further counseled about premature rupture of membranes, meconium, bleeding during labor, and when to proceed to hospital. Under hypnosis, relaxation and obstetric imagery were reviewed, a verbal rehearsal of labor and delivery was done, and pain control was taught (by inducing glove anesthesia, which was then transferred to the abdomen). The partner was shown how to facilitate the pregnant woman's relaxation.

Most of the patients seen in the office practice were offered and opted to learn hypnosis (89%), and they were delivered by the hypnotist/accoucheur. Many patients seen in the clinic practice were not offered hypnosis (60%) because the physical setting at the clinic was not conducive to teaching hypnosis, and the resident staff were involved in their deliveries. Patients who opted not to learn or who were not offered hypnosis formed our control population (CNTRL). These patients were counseled about labor and delivery, in a similar manner to the hypnosis group, at regularly scheduled antenatal visits during the last month of pregnancy.

All deliveries were done at Women's College Hospital (WCH) between January 1985 and November 1989. No hypnotizability tests were performed,[8,13-15] although the hypnotist/accoucheur did not encounter any patient who elected to learn self-hypnosis and did not achieve at least a light trance. Audiotapes were produced during the individual sessions and used as a teaching aid to help patients practice self-hypnosis at home. Occasionally, patients brought their tapes to hospital to use at the time of their delivery as well.

A retrospective chart review was performed of the admission sheets, antenatal records, nursing notes, anesthesia records, and delivery summaries. All extracted information was checked for clarity, and rules were established for standardized data extraction and verification of accuracy. Charts were analyzed prospectively by the research associate, who was blinded as to which patients had been taught hypnosis. All of the data collection sheets were reviewed for internal consistency, and 70% of the charts were subsequently reviewed for clarification and reliability. Reliability of data entry was similarly verified.

For purposes of comparison, hypnosis and non-hypnosis groups were subdivided by risk (low and high risk) and parity (primiparas and multiparas). Low-risk patients had no major medical problems before pregnancy and did not develop any major complications during their pregnancies (e.g., diabetes, breech presentation, multiple births, previous cesarean section, hypertension, IUGR, toxemia of pregnancy). The number of high-risk patients was too small to provide sufficient statistical power. Thus, their data were excluded. The distribution of primiparas and multiparas was similar in the low-risk group (see Results). Therefore, they were grouped together for compara-

tive purposes. Where applicable, for data obtained with low-risk deliveries, hypnosis patients (HYP) were compared to low-risk patients delivered by other family physicians without the use of hypnosis. These WCH patients were all delivered at the same hospital between April 1, 1985, and March 31, 1986, and provided the second control population (WCH). Data collection for these patients was carried out in a similar way.[1]

To look at patient satisfaction, the Labor and Delivery Satisfaction Index (LADSI) was administered postpartum. LADSI is a validated instrument developed by Lomas et al.[16] This questionnaire consists of 38 items (15 technical component questions and 23 caring component questions) with a 6-point response scale, resulting in a total range of scores from a low satisfaction score of 38 to a high score of 228. To this questionnaire, we added questions specifically related to the use of hypnosis at the time of labor and delivery. The answers to these additional questions were then correlated with the patient's response to the validated LADSI.

These questionnaires were mailed to patients (HYP, CNTRL) delivered by the hypnotist/accoucheur at 6 weeks to 4 years postpartum. Questionnaires were answered anonymously but were returned in such a way that nonresponders could be traced for a second mailing performed 6 weeks later.

Of the total number of patients (156), some women delivered more than one baby in the observed period of time. We asked these patients to answer only one questionnaire, relevant to their most recent delivery experience. For 29 mothers (19%), we had no current mailing address. The overall response rate to the LADSI questionnaire was 85%. Of the total number of questionnaires received (108), 10 were not included because of insufficient data (i.e., more than 10 missing answers). On the remaining 98 questionnaires, there were 69 missing responses out of a possible total of 3,724 (1.85%). Missing responses were corrected by calculating the respondant's mean of the scores for answered questions. This calculated mean value was substituted for the missing value and then summed, to obtain a mean corrected LADSI score (Dr. Murray Enkin, personal communication).

The response rate was higher for office patients (92%). A greater percentage of clinic patients had no current mailing address (29% vs 13% of office patients). Of the LADSI respondants, a total of 77% learned hypnosis. The office patient group had a higher percentage of hypnosis patients (89%), and the clinic patient group had a higher percentage of controls (60%). Because the questionnaires were answered anonymously, we had to include all responses combining primiparas and multiparas, high-risk and low-risk patients, and patients seen by referral for hypnosis only.

Collected data were entered on a 386 PC, using the dBase4 software package. All family practice cases at Women's College Hospital from the TriHospital Low Risk Outcomes Study[1] were translated into the dBase4 format. This was then merged to an SAS dataset in order to compare WCH data to the cases reviewed in this study. Categorial variables were analyzed by the χ^2 or Fisher's exact tests. Interval variables were analyzed by Student's t-test. Where the interval variables did not possess a normal (curve) distribution, the median test was applied. All tests were 2-tailed. A level of significance of $p < 0.05$ was adopted. Statistical analysis was performed using SAS statistical software version 6.04.[17]

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*Detailed methodology is available on request from senior author, who has a script intended for publication in the form of audiotapes.

RESULTS

Population characteristics and maternal and neonatal demographics were similar for the HYP and CNTRL groups, except that the length of pregnancy was significantly longer in the HYP patients compared to CNTRL ($p = 0.012$), producing babies that weighed 198 g more ($p = 0.022$). There was a statistically significant difference in maternal age between HYP and CNTRL (HYP older by 1.4 years, $p = 0.025$), but this difference was not thought to be clinically significant (Table 1). The type of accommodation requested (an economic indicator) was similar, as was the distribution of primiparas and multiparas. There was no difference in Apgar scores of babies at 5 min. There were no significant differences in the HYP and WCH comparison (Table 1).

The number of artificial ruptures of membranes (ARM) in the HYP compared to the CNTRL group was not statistically different (Table 2), whereas there were significantly more ruptures in the WCH control group compared to HYP ($p = 0.028$). The epidural rates in HYP patients were significantly lower by 18% than the CNTRL group ($p = 0.025$) and 11% lower than the WCH group ($p = 0.035$). There were 18.5% fewer intravenous lines used in HYP patients compared to either controls (CNTRL $p = 0.023$, WCH $p = 0.0014$). The reduced intravenous rate may be attributed to the reduction in epidurals. Episiotomy rates were 12% lower in HYP patients than CNTRL (not significant) and 16% lower in HYP than the WCH group ($p = 0.007$). There was a 10% lower use of the intervention triad (epidural–forceps–episiotomy) in the HYP group than the CNTRL (not significant) and a 16% lower use in the HYP than the WCH group ($p = 0.033$).

The outcomes of deliveries are compared in Table 3. Although the number of spontaneous vaginal deliveries was greater by 12.3% when HYP was compared to CNTRL, it was not statistically significant ($p = 0.09$). There was no difference when HYP was compared to WCH. Hypnosis patients had significantly more labor room deliveries (as opposed to the delivery/operating room) than CNTRL ($p = 0.011$). These data were unavailable for WCH controls.

The frequency of the variables of cervical dilatation on admission and the duration of stages 1, 2, and 3 were not normally (curve) distributed. Therefore, the median test was applied. The results are shown in Table 4. Cervical dilatation on admission was 1 cm less in the CNTRL group, but this difference was not statistically significant. The interval between the time of arrival in hospital and the time anesthesia was requested was longer in the HYP group by 50 min, but this was not statistically significant. Data for the duration of stage I was unavailable for the WCH group. The duration of the second stage of labor was 10 min shorter (median test, $p > [Z] = 0.008$) for the HYP group compared to CNTRL.

There was no significant difference in satisfaction between the HYP and CNTRL groups (Fig. 1) using the LADSI questionnaire. Because there was no significant difference between the two, the scores were combined (Fig. 2). The distribution we obtained is similar to the one obtained by Lomas et al,[16] and responses were generally positive.

Since the LADSI scores showed no overall difference in satisfaction, we chose to compare 11 of the individual LADSI questions that we thought hypnosis might affect most. Two of these 11 questions were found to be statistically different with both t-test and Fisher's exact analyses when HYP was compared to CNTRL. Hypnosis patients did not think too much equipment was used during labor and delivery ($p = 0.0002$), and they were more satisfied with the way pain was relieved during labor ($p = 0.05$).

We added our own questions to the LADSI. Responses to these questions showed that the hypnotist either performed or assisted in the delivery of 75 of the 98 patients who responded and were included in this part of the study. The other 23 patients had been either referred for hypnosis only, delivered precipitously, or delivered when the hypnotist/accoucheur was unavailable. Patients were more satisfied with their deliveries when the hypnotist was also the accoucheur ($p = 0.029$). Three quarters of the responders learned hypnosis. More women used hypnosis during their labor (70%) than at the time of their delivery (32%). Only 11% of women were aware of the use of hypnosis to stimulate desultory labor or encourage the onset of labor after premature rupture of membranes. Most of the hypnosis patients had access to practice audiotapes (88%), and a high percentage of these patients (94%) used them to practice self-hypnosis. Having practiced, 82% of hypnosis patients were either confident (25%) or somewhat confident (58%) in their ability to hypnotize themselves. Of those (64) women who had an audiotape, only 20% actually used it in the labor room. More patients (32%) used self-hypnosis at the time of delivery without a tape.

TABLE 1. POPULATION CHARACTERISTICS

Variable		HYP (87)	CNTRL (56)	WCH (352)	HYP vs CNTRL	HYP vs WCH
Maternal age (years)	x̄	28.4	27.0	28.6	HYP older*	No difference
Gestational age (weeks)	x̄	39.8	39.0	n.a.[a]	HYP older*	n.a.[a]
Baby's birth weight (g)	x̄	3,541	3,343	3,455	HYP larger*	No difference
Parity	% primiparas	67.8	75.0	59.7	No difference	No difference
Accommodation type	% ward	17.2	23.2	22.8	No difference	No difference
	% semiprivate	49.4	44.6	47.6		
	% private	33.3	32.1	29.6		
Apgar score	% >6	100	100	99.4	n.a.[b]	No difference

[a] WCH gestational age not defined the same.

[b] Sample size too small for a valid comparison.

*χ^2 or t-test for between-group differences significant at $p < 0.05$.

TABLE 2. INTERVENTION RATES

Variable	HYP (87)	CNTRL (56)	WCH (352)	HYP vs CNTRL	HYP vs WCH
Epidural	51.7%	69.6%	63.1%	HYP less*	HYP less*
IV	49.4	67.9	67.9	HYP less*	HYP less**
ARM	37.9	26.8	50.0	HYP more[a]	HYP less*
Induction	4.6	7.1	n.a.[b]	No difference	n.a.[b]
Augmentation	50.6	46.4	n.a.[b]	No difference	n.a.[b]
Continuous fetal monitor	43.7	48.2	53.1	No difference	No difference
Morphine	5.8	3.6	n.a.[b]	No difference	n.a.[b]
Forceps	20.7	33.9	24.7	HYP less[a]	No difference
Episiotomy	42.5	54.0	58.4	HYP less[a]	HYP less**
Tear	53.8	46.2	46.2	No difference	No difference
TRIAD[c]	15.0	30.8	25.2	HYP less[a]	HYP less*
Consultation	42.5	54.6	36.9	HYP less[a]	No difference

[a] Observed difference clinically significant ($\geq 10\%$) but not statistically significant.
[b] WCH group data not defined the same or not collected.
[c] TRIAD, The patient received epidural, forceps, and episiotomy interventions.
*χ^2 for between-group differences significant at $p < 0.05$; **$p < 0.01$.

When patients were asked how they used hypnosis, 86% used it to relax, 63% used it for pain control, 47% used it to sleep, and 32% used it postpartum. Of those women who learned hypnosis, 82% said they would use it again, and 77% said they would recommend its use to friends.

DISCUSSION

Our hypothesis was that self-hypnosis decreases the number of interventions (especially epidurals), increases the number of spontaneous vaginal deliveries, and increases the patient's satisfaction with her birthing experience. There were significant differences in the epidural and intravenous rates for both comparative groups. Other interventions, such as artificial rupture of membranes, episiotomy, and the use of the epidural–forceps–episiotomy triad, were statistically different when HYP patients were compared to WCH. The differences in ARM and episiotomy rates between HYP and WCH groups are more likely explained by a difference in practice style than the use of hypnosis. It is interesting to note that the lower episiotomy rate

was not accompanied by a reciprocal increase in the tear rate. We also were able to demonstrate an increased number of deliveries in the labor room.

In comparing our results to other studies, we were unable to corroborate a difference in the duration of overall labor,[10,12,14] a shortened first stage[9,11,14,15,18] or a lengthened second stage.[9] Instead, we found the second stage to be 10 min shorter for hypnosis patients. Data for the onset of the first stage are unreliable because some physicians regard the beginning of the first stage as the actual time of onset of labor, whereas others regard it either as the time when women enter the active phase of the first stage of labor or the time when patients enter hospital. For this reason, the data were not extracted for the WCH group. We were unable to show a decrease in the number of operative deliveries.[9,10,14] Similar to Davidson,[11] we showed a decreased episiotomy rate, but no decrease was found in the tear rate. At our hospital, the overall epidural rate is high, and the staff are biased, preferring epidurals. Therefore, in this setting, it may be significant that the epidural rate was decreased in the hypnosis group.

Many studies measure the effectiveness of hypnosis as an

TABLE 3. OBJECTIVE OUTCOMES

Variable	HYP (87)	CNTRL (56)	WCH (352)	HYP vs CNTRL	HYP vs WCH
Spontaneous vaginal delivery	71.3%	58.9%	68.2%	HYP more[a]	No difference
Operative delivery	28.7	41.1	31.8	HYP less[a]	No difference
Cesarean section	8.0	7.1	7.1	No difference	No difference
Labor room delivery	62.1	41	n.a.[b]	HYP more*	n.a.[b]
Manual placenta removal	2.3	5.4	3.4	No difference	No difference
Postpartum hemorrhage	4.6	5.4	10.2	No difference	No difference
NICU admission	23.0	14.3	n.a.[b]	No difference	n.a.[b]
Breastfeeding	93.1	91.0	94.3	No difference	No difference

[a] Observed difference clinically significant ($\geq 10\%$) but not statistically significant.
[b] WCH group data not defined the same or not collected.
*χ^2 or Fisher's exact test for between-group differences significant at $p < 0.05$.

TABLE 4. OBJECTIVE OUTCOMES

Variable		HYP (87)	CNTRL (56)	WCH (352)	HYP vs CNTRL	HYP vs WCH
CDOM[a] (cm)	x̄	3.4	2.3	3.6	No difference	No difference
	SD	±3.0	±2.2	±2.0		
Stage 1 duration (min)	x̄	510	501	n.a.[b]	No difference	n.a.[b]
	SD	±355.0	±404.9			
Stage 2 duration (min)	x̄	53.7	63.7	51.4	HYP shorter*	No difference
	SD	±48.6	±47.9	±42.2		
Stage 3 duration (min)	x̄	5.8	7.2	6.6	No difference	No difference
	SD	±5.2	±7.1	±7.6		

[a]CDOM, cervical dilatation on admission.
[b]WCH group data not collected.
*Median test for between-group differences significant at $p < 0.01$.

anesthetic and analgesic at the time of delivery.[9,11,14,15,19] Hypnosis was offered as an option, and no attempt was made to withhold other forms of anesthesia. Hypnosis patients required less anesthesia (χ^2, $p = 0.041$) when comparing significant anesthesia to the use of either no anesthetic or only a local. There was an increase in the number of spontaneous vaginal deliveries, although the increase was not statistically significant. In our hospital setting, we consider a reduction in the use of epidurals and an increase in the number of spontaneous vaginal deliveries as success.

The problems encountered in a retrospective study in examining outcomes and comparing three groups are apparent.[1] Many authors have attempted to use control groups in hypnosis studies, with varying amounts of success.[10,11,14] This preliminary study was done to determine whether there was enough of an observed difference to justify a controlled randomized prospective study in the future. Our hypnosis patients were self-selected, motivated subjects. Many of our control patients were not offered hypnosis as an option. An attempt was made to control for the delivery site by comparing our patients to another low-risk patient population delivered at the same hospital by

other family physicians.[20] This, however, did not eliminate the individual delivery style of the hypnotist/accoucheur as a variable. The control patients were all delivered after the accoucheur began to use hypnosis. Therefore, we cannot say that treatment of the nonhypnosis control group was not unconsciously influenced by the use of hypnosis as well.[14]

When comparing hypnosis to control patients delivered by the same physician and hypnosis patients to control patients delivered by other physicians, the comparability of these three patient populations must be ascertained. Is the age difference of 1.4 years clinically significant in the under-30 age group? Is the socioeconomic status of a patient accurately determined by her preferred hospital room accommodation? We attempted to use premium assistance as an additional economic indicator, but this information was not available on the chart after 1988. What does the fact that hypnosis patients delivered closer to term mean? The longer gestational age of HYP patients resulted in significantly larger babies. Do the size differences in babies affect the neonatal outcomes? An observed decrease in intervention rate with hypnosis would be notable, assuming that larger babies might be more difficult to deliver. If the observed differences in
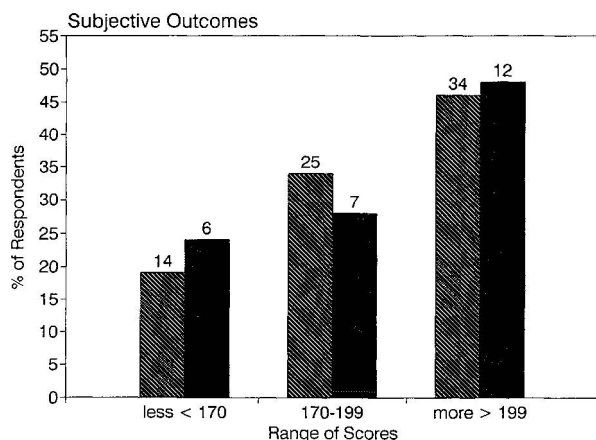

FIG. 1. Patient satisfaction with delivery, hypnosis vs control (mean corrected method).
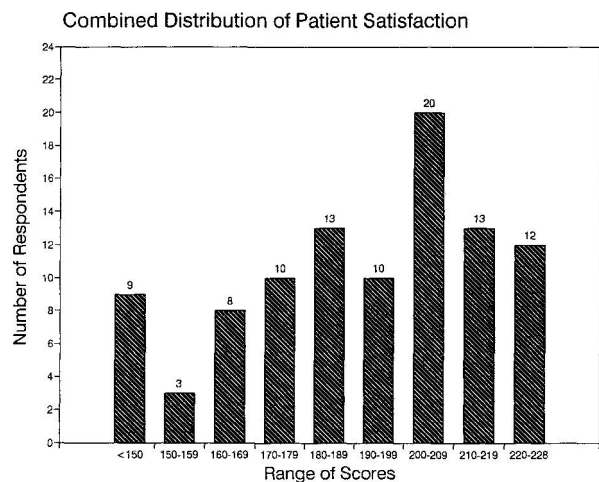

FIG. 2. Hypnosis and control satisfaction scores were combined and corrected for missing response (group means).

population characteristics are significant, it would be more difficult to demonstrate that hypnosis has a beneficial effect.

Obtaining a larger number of patients in a future trial may demonstrate both clinical and statistical differences. Greater numbers of patients might allow us to include the outcomes of high-risk patients as well (although preliminary results indicate that hypnosis has a greater effect on low-risk and multiparous patients). Finally, it is possible that statistical differences do not reflect significant clinical differences.

Teaching self-hypnosis can be time consuming for the clinician. Our study had two standard 90-min office visits, with half of the time devoted to counseling. Other studies had variable numbers of hypnosis training sessions, with up to 8 h of time invested.[15,18,19,21,22] Because our patients were taught self-hypnosis, the time commitment of the accoucheur to hypnosis was limited.[22] The influence of the nursing staff on patients can be considerable, especially during the first stage of labor, in the absence of the hypnotist/accoucheur. In our hospital setting, the nursing staff are more used to and comfortable dealing with patients relaxed by chemoanesthesia. It might have been valuable to train the nurses more formally in the management of hypnosis patients.[9]

One study in the United Kingdom showed that hospital labor room deliveries were more costly than home deliveries.[9] Our study shows a significant increase in the number of labor room deliveries over operating room deliveries, which may result in cost savings. Additional savings can be achieved with fewer interventions, procedures, drugs, and associated consultations. There are fewer consultations with obstetricians (Table 2). Not included in these reduced numbers is a further reduction of consults with anesthetists, which would be expected with the reduced need for epidurals. Hypnosis is not reimbursed by the Ontario government medical insurance plan when it is administered at the time of delivery. Therefore, its use did not add to the delivery cost. The reduced cost, due to decreased consults and procedural fees, more than offsets the cost of 3 h of antenatal counseling and hypnosis.

Anonymity of the questionnaire is important to ensure both a high response rate and an unbiased response. Because of the method we used to insure anonymity, we were unable to compare the answers of high-risk and low-risk patients, primiparas and multiparas, private and clinic patients, and patients referred only for hypnosis (i.e., not for delivery). Therefore, we are only able to draw general conclusions about satisfaction. In future, to examine subpopulations, we would maintain the anonymous coding system on the questionnaire itself, entering the code into the computer as well.

Patients who are unhappy with their deliveries may be less likely to respond and could bias the study. Time may be a factor in the ability to remember true feelings postpartum because in some cases there was a long lag time between the delivery and receiving the questionnaire. When Lomas et al.[16] validated the LADSI questionnaire, the responses were consistent at 2 and 6 weeks postpartum. It is uncertain whether responses are stable over our time lag, which varied from weeks to years. Shearer[23] suggests that the LADSI is only capable of obtaining mostly positive responses because it was not administered to patients who were known to be dissatisfied. If this is the case, one could only obtain a score consistent with satisfaction. A less elaborate scoring system devised by Davidson[11] showed that hypnosis

patients felt happy and confident, experienced labor as a pleasure and achievement, and described their labor as a pleasant sensation. Other authors mention increased satisfaction of hypnosis patients using a linear analogue scale[9,10] and patients' remarks.[18]

SUMMARY

A reduced number of interventions is associated with the use of self-hypnosis by low-risk patients delivered in a downtown Toronto teaching hospital. The reduction of interventions has clinical and economic implications. There were no significant differences in birth outcomes. It would have been valuable to demonstrate a significant difference in satisfaction with hypnosis, but the vehicle we used showed general satisfaction with all patients' deliveries regardless of hypnosis. The LADSI questionnaire may not be sufficiently sensitive to detect dissatisfaction.

ACKNOWLEDGMENTS

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