



Maximizing Maternal Birth Experience through the Use of a Labor Mirror

Jennifer Doyle*, Amy Lyzen, Michele McCarroll, Karen Frantz, Tiffany Kenny and Vivian Gruenigen

Department of Obstetrics and Gynaecology, Summa Health System, USA

*Corresponding author: Jennifer Doyle, Department of Obstetrics and Gynaecology, Summa Health System, USA, Tel: (330) 375-3718; E-mail: doylej@summahealth.org

Received date: Feb 1, 2016; Accepted date: Feb 15, 2016; Published date: Feb 23, 2016

Copyright: © 2016 Doyle J, et al., This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

The purpose of this study was to describe the frequency with which mirrors are utilized and describe women's experience with mirrors during birth. This was a descriptive study. An electronic survey was administered in the postpartum unit from June, 2013 to February, 2014. A convenience sample of n=500 was obtained. The survey intended to gauge the frequency of labor mirror use as well as women's self-reported experience related to mirror use during labor and/or birth. Postpartum women were included in the project who were English literate and between the ages of 18-49. Statistical analysis included examination of the data and performance of descriptive statistics including Student's T-Test, Chi-square, and Fisher's Exact test. Women most likely to use the mirror were in the 18-29 years age group, Caucasian, and privately insured. 39% of women who were offered the mirror used it. According to the women who used the mirror during birth, 53% agreed that it helped them focus on pushing and reduced their pushing time during labor. Additionally, women who used the mirror reported that it added to their overall labor experience and was a positive experience (58%). More than half (53%) of women who used the labor mirror agreed that it assisted them during pushing, added to their overall labor experience (58%), and was a positive experience (55.5%). While additional research is needed, nurses may find the labor mirror to be a beneficial tool to increase pushing efficacy and enhance the maternal birth experience.

Keywords Labor mirror; Labor; Obstetrics; Patient satisfaction

Introduction

Intra-partum nurses employ a variety of interventions, techniques, and aides to facilitate labor progress and fetal descent while maximizing the birthing experience for the mother. Many of those birthing interventions and techniques are not pharmacologic such as body positioning, comfort measures, anticipatory guidance, and advocacy (Association of Women's Health, Obstetric and Neonatal Nurses [1]. Evidence has revealed enhanced fetal descent through the force of gravity when labouring women are seated in an upright position [2-7]. In order to attain and maintain that upright position, a variety of birthing aides such as birthing balls, cushions, squat bars, hydrotherapy tubs, and birthing stools may be employed [8]. Evidence has supported the use of these aides to help manage the labor progress or enhance the maternal birth experience [9]. However, a gap remains in the literature with regard to the effectiveness of the labor mirror as an aide to help maximize the maternal birth experience.

Intra-partum birthing aides may positively affect birth outcomes such as pushing duration and perineal trauma while enhancing the maternal experience [1,10]. Traditionally, labor mirrors are mainly used to observe the baby's descent and birth via vaginal delivery [11]. However, a labor mirror may also be used in some circumstances to allow women to witness the birth of their neonate via cesarean section. Additionally, labor mirrors can be used throughout the second stage of labor to maximizing maternal pushing efforts [11]. An increased sense of control may be obtained when the mother can physically see herself pushing. A woman's sense of control is associated with increased birth satisfaction [12,13]. Thus, women that see their baby born may enhance the birth experience for some women [11].

Labor mirror use is a technique common to intra-partum practice and is often taught during prenatal birthing courses. Based on a literature search, there are no objective data to validate the use of labor mirrors to enhance the maternal birth experience in English journals. However, one study from Spain assessed pushing stimulation and birth experience in women and their partners who used a mirror during the second stage of labor [11]. Results from this one study indicate that women who used the mirror during the second stage of labor were stimulated to push (73%) and valued the experience favourably. Anecdotal evidence suggests that using a labor mirror during the second stage of labor may facilitate pushing effectiveness and accelerate delivery for a safe and meaningful birth experience. Fundamentally, a mirror can be used to guide maternal pushing efforts, observe the birth of the neonate, and enhance the maternal birth experience.

The purpose of this study was to describe the frequency with which mirrors are utilized as well as women's experience with mirrors during birth. Mirror use is an inexpensive, simple intervention that has practice implications for intra-partum nurses. There are no published data to date in English to support or refute the use of intra-partum labor mirrors.

Methods

This was a descriptive study. The study protocol was approved by the Institutional Review Board within our facility, receiving expedited approval according to Code of Federal Regulations on the Protection of Human Subjects (45 CFR 46.110 and 21.CFR56.110) under Category 7. The authors report receiving a grant to conduct the study from Adroit Industries, who manufactures a ceiling mirror for use in labor and delivery.

Setting

The study took place in a Midwest level III perinatal centre. Annual delivery volume averages 3,000. The level III perinatal centre houses an Antepartum unit, an obstetric (OB) Emergency (Triage), Labor and Delivery, two Mother-Baby postpartum units as well as a Special Care Nursery, which is owned and operated by a Level III Children's Hospital. Onsite staff is dedicated to each subspecialty unit. However, as the primary study setting is the intrapartum unit, the following description reflects our Labor and Delivery unit. Approximately one-third of the patient population is categorized as high risk and is a mix of women who are commercially/privately insured and publically insured. The Labor and Delivery unit employs 63 RNs and 2 LPNs. Providers include approximately 80 private attending physicians, 8 family practice physicians with delivery privileges, 25 resident physicians, 9 certified nurse-midwives, and 6 full-time obstetric (OB) hospitalists.

Procedure

Intra-partum labor mirrors are used regularly within our facility. A ceiling mirror is available in one birthing suite. Three additional mobile labor mirrors are available for use in any of the 14 birthing suites and three operating rooms. For the purposes of this study, the term "labor mirror" refers to any of the available mirror types, whether mobile or ceiling. The study was designed to gauge the frequency of labor mirror use as well as women's self-reported experience.

A convenience sample of n=500 was obtained. Women were included in the project who were English literate and between the ages of 18-49. Participants experienced either a vaginal or caesarean delivery of a viable neonate. Women were approached to participate during the postpartum period between four hours after birth and hospital discharge. Care was taken to avoid approaching a patient during procedures, infant feeding, and sleeping.

An electronic survey was administered in the postpartum unit from June, 2013 to February 2014. The online survey was facilitated by one of two co-investigators. Consent was obtained via the survey functions of the laptop which detailed "by taking this survey, you are consenting to take part in this study". While participation was voluntary, assurance was given that the decline to participate would have no negative impact on their care. The online survey was administered via laptop, and completed by the woman. The participant questionnaire was de-identified at the time of completion by the online survey company.

The survey included the following components: demographic information, mirror usage, birthing experience, and hospital experience. The information was kept confidential, records de-identified, and the database was maintained by a password-protected secure database. Integrity of data was maintained via the database, which was housed in a locked office and was subject to a random audit of the primary investigator and director of women's health research.

Statistical methods

Statistical analysis included examination of the data for outliers, normality, and performance of descriptive statistics including Student's T-Test, Chi-square, and Fisher's Exact test when appropriate and percent agreement. Since this was a pilot descriptive study about the mirror, a power analysis was not completed and future studies will use the current results to determine effect and sample sizes. Variables examined included demographics, insurance type, parity, women who

were offered the mirror versus women who were not, and satisfaction with mirror usage. Data were analysed in SPSS 22.0.

Results

Surveys were collected from n=500 women prior to their discharge from the hospital postpartum unit. Of the women surveyed, most reported to be 18-39 years of age, non-Hispanic, Caucasian, privately insured, and delivering their first child.

	Offered the Mirror		P-value
	Yes (n=189)	No (n=288)	
Age Group			0.433
18-29	105 (55.6%)	165 (57.3%)	
30-39	83 (43.9%)	117 (40.6%)	
40+	1 (0.5%)	5 (1.7%)	
Race -n(%)			0.000*
Caucasian	162 (86.2%)	183 (63.5%)	
Black	19 (10.1%)	87 (30.2%)	
Other	8 (4.2%)	19 (6.5%)	
Ethnicity -n(%)			0.173
Non-Hispanic	183 (96.8%)	279 (96.9%)	
Hispanic	1 (0.5%)	6 (2.1%)	
Unknown	5 (2.6%)	3 (1.0%)	
Insurance Status -n(%)			0.001*
Private	136 (72.0%)	160 (55.6%)	
Public	47 (24.9%)	120 (41.7%)	
Other	6 (3.1%)	8 (2.7%)	
Parity Status - n(%) §			0.000*
1	109 (57.7%)	87 (30.2%)	
2	52 (27.5%)	114 (39.6%)	
3	20 (10.6%)	60 (20.8%)	
4+	8 (4.2%)	27 (9.4%)	
For Categorical data: Chi-square and Fisher's Exact tests were performed			
* = denotes statistical significance p < 0.05			
§ = Parity status was reported from the mother in post partum of the current hospital stay			

Table 1: Nursing practices of offering the patients the mirror for their labor experience.

Of the completed surveys, 60% (n=288) of the women were not offered the mirror versus only 39.6% (n=189) during the labor period.

There were significant differences in race ($p=0.001$), insurance status ($p=0.0001$), and parity ($p=0.0001$) categories in the women not offered the mirror compared to women who were offered the mirror (Table 1). Women were more likely to be offered the mirror if they were Caucasian, privately insured, and delivering their first child. Of the women offered the mirror, (n=189) only 28% (n=53) used the mirror

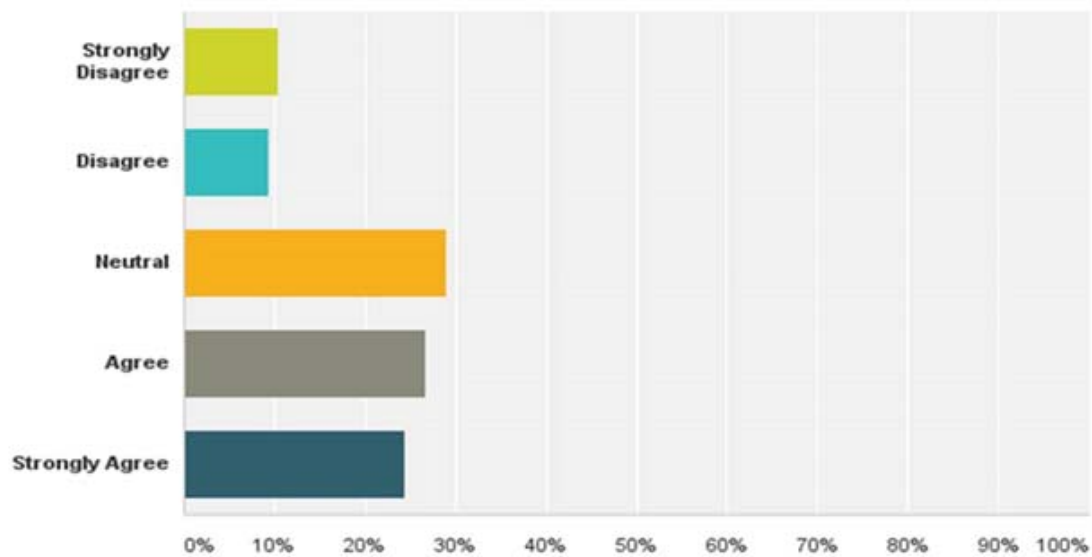
during the delivery (Table 2). Of the women who were offered the use of a mirror, there were no significant differences between women who actually used the mirror versus those women that chose not to use the mirror. Women more likely to use the mirror during birth were in the 18-29 years age group, Caucasian, non-Hispanic, privately insured, and birthing their first child.

Variable	Used the Mirror during Labor		P-value
	Yes (n=53)	No (n=134)	
Age Group			0.61
18-29	27 (50.9%)	76 (56.7%)	
30-39	26 (49.1%)	57 (42.5%)	
40+	0 (0%)	1 (0.7%)	
Race -n(%)			0.226
Caucasian	50 (94.3%)	112 (83.6%)	
Black	3 (5.7%)	16 (11.9%)	
Other	0 (0%)	6 (4.5%)	
Ethnicity -n(%)			0.522
Non-Hispanic	53 (100%)	129 (96.3%)	
Hispanic	0 (0%)	1 (0.7%)	
Unknown	0 (0%)	4 (3.0%)	
Insurance Status -n(%)			0.793
Private	40 (75.5%)	95 (70.9%)	
Public	12 (22.6%)	35 (26.1%)	
Other	1 (1.90%)	4 (3.0%)	
Parity Status - n(%) §			0.829
1	34 (64.2%)	73 (54.5%)	
2	12 (22.6%)	40 (29.9%)	
3	5 (9.4%)	15 (11.2%)	
4+	2 (3.8%)	5 (4.4%)	
Use during labor was defined as using the mirror at any point in time during the labor process.			
For Categorical data: Chi-square and Fisher's Exact tests were performed			
* = denotes statistical significance $p < 0.05$			
§ = Parity status was reported from the mother in post partum of the current hospital stay			

Table 2: Results of women offered the mirror during birth.

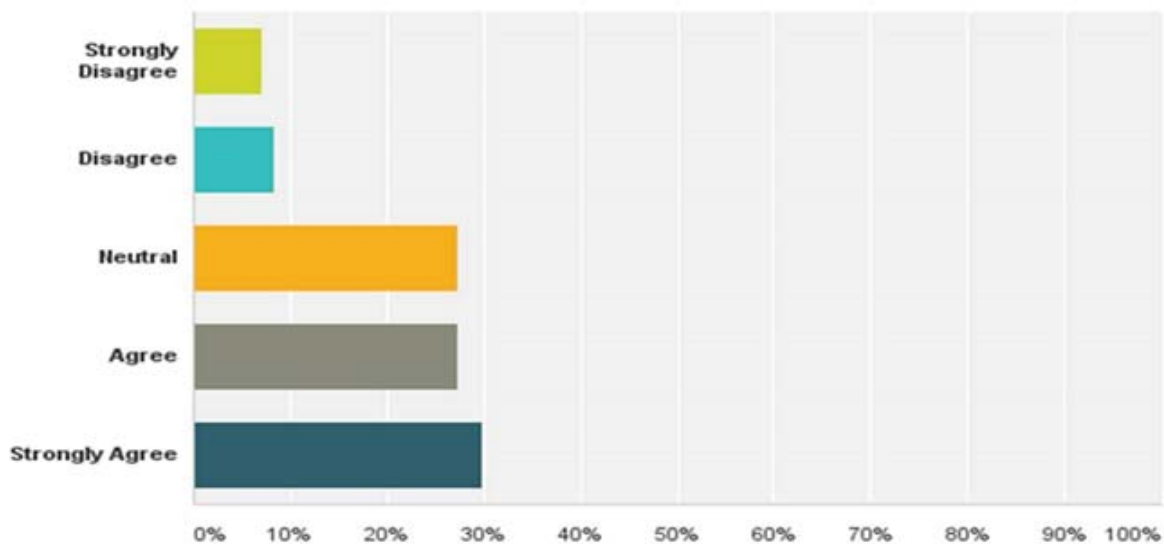
According to the women who used the mirror (n=53) during birth, 53% (n=28) strongly agreed or agreed that the mirror helped them focus on pushing (Figure 1) versus only 19.7% (n=10) who strongly disagreed or disagreed. Similarly, 39% (n=26) of these women strongly agreed or agreed that the mirror reduced their pushing time during

labor. Correspondingly, women who used the mirror reported that 58% (n=31) strongly agreed or agreed that using the mirror added to their overall labor experience whereas only 14% (n=7) strongly disagreed or disagreed (Figure 2). Overall, 55.5% (n=53) of the women surveyed reported that the birthing mirror was a positive experience.



Likert scale responses from patients that used the birthing mirror (n=53)

Figure 1: Using the ceiling mirror helped me focus on how to push during labor.



Likert scale responses from patients that used the birthing mirror (n=53)

Figure 2: Patient responses regarding how the mirror added to the overall labor experience.

Discussion

The discussion section will focus on the two purposes of the study. First will be the frequency of mirror offer or use. Second will be the self-reported experience of the women who did use the mirror. The study findings suggest that women who use the labor mirror may find it a useful tool to enhance maternal pushing efforts as well as the

overall birthing experience. Unfortunately, 60% of women were never offered a labor mirror. The survey did not specify delivery mode and was equally administered to women who delivered vaginally and via caesarean section. Therefore, it is understandable that some women may not have been offered the labor mirror. While mirror use in the operating room is exceedingly rare, our facility does have mobile mirrors that could be used, albeit not likely. It should be noted that all

women potentially could use the mirror, as we do have mobile mirrors that can be used in the operating room. Therefore we did not exclude women who delivered via caesarean section, though we acknowledge the low likelihood of mirror use in the operating room.

A majority of women who completed the survey were not offered the labor mirror. Additionally, only 28% of women offered the mirror actually used the mirror. Questions to assess women's rationale for using or declining mirror use were not included in the study. As previously discussed, perhaps the reported low offering and use of the mirror had to do with delivery method, which was not identified in the survey. As the surveys collected (n=500) did not specify delivery mode, there is no means to validate how many women underwent a caesarean section, although the average ranges between 20-30% of all deliveries. Another possible explanation for the low offering finding was a product of the convenience sample attained. Only women who agreed to complete the questionnaire were included. Finally, mirror use is a personal choice. Not every woman is eager to visualize her birth experience. Further, how the labor mirror is presented to women for use is practitioner-dependant.

The self-reported experience of the women who did use the mirror offered additional data. Of those women who used the mirror, more than half (53%) agreed that the labor mirror assisted them during pushing, added to their overall labor experience (58%), and was a positive experience (55.5%). While mirror use in the operating room does occur, it is utilized with much less frequency than in a birthing suite. This fact may be amenable to change through education and advocacy.

A number of tools, aides, and devices have been reported to enhance the birthing experience and offer a plethora of physiologic benefits during the second stage of labor. Examples include hydrotherapy tubs, squat bars, and birthing balls [14,15]. Previous studies cite a lack of maternal preparation, individual control, and use of non-pharmacological tools directly relates to dissatisfaction with the birthing experience [16]. The labor mirror use in labor and delivery can be used to educate patients about pushing techniques and offer guidance without being directive. Pushing effectiveness may be increased, as the woman can visualize fetal descent [11]. The visualization may serve to motivate and encourage women during the last phases of the second stage of labor.

This project had several limitations worth noting. First, results may not be widely generalizable because the survey was a convenience sample based on postpartum women's willingness to participate and the low (n) of patients who used the mirror. While 500 women completed the questionnaire, there were only 189 women who were offered the mirror and 53 who actually used the mirror. Some questions on the electronic survey referenced use of the 'ceiling mirror', although the administering investigators advised women prior to taking the survey that mirror use was not limited to the ceiling model. The questionnaire was limited to English literate subjects for investigator convenience, and our facility cares for a large refugee population that is non-English speaking.

Second, the study was limited to one labor and delivery unit in one facility. Significant barriers related to mirror use included the nurses' inconsistency in offering a labor mirror to all women intra-partum. How can a woman have the advantage of a device, if it is not offered? Of all of the women that participated in the study, 60% were not offered the mirror. Mode of delivery may have played a significant role in this finding, as we did not control for caesarean section deliveries.

Labor mirror access may be another barrier. There are only 4 mirrors in the labor and delivery unit out of 14 rooms and three operating rooms.

Lastly, the results were based on a self-reported maternal survey verses objective quantitative data. Not only did a woman have to agree to complete the questionnaire, the answers were subjective. Nonetheless, answers were reflective of true patient perception and therefore important to measure. Currently healthcare is focused on quality outcomes and patient satisfaction. Certainly, self-reported patient perception is a valid basis to assess overall patient experience and satisfaction with care. While there are limitations to this observational study, results regarding the use of the labor mirror in terms of frequency and women's self-reported experience do have applicable value to clinical practice.

Labor and delivery nurses play a vital role in a women's satisfaction with the birthing experience. While usually a time of celebration, many women are frightened and rely on their nurse for support and guidance through their individualized birth experience [17]. Nursing assessments and interventions begin upon admission and continue throughout the intra-partum period. Nurses implement the plan of care via patient education about techniques and tools that may be helpful during labor. That plan of care is modified as needed to meet the changing clinical presentation during the process of birth. Nurses must also consider the plans, expectations, and desires of the woman and her support person(s).

Nurses should be advocates, encouraging questions and verbalization of fears or concerns intra-partum. The labor and delivery nurse can offer suggestions and is the patient's most valuable resource in the evaluation of labor progress. Fifty eight percent of women who used the labor mirror attested that it added to their overall delivery experience. A labor mirror is a tool that the nurse can easily utilize to increase pushing focus and effort, thus potentially reducing pushing time while enhancing the overall birth experience. Nurses have the ability to ensure the availability of a labor mirror, which can uniquely provide a woman with personal visualization of this most momentous life event and therefore enhance a woman's birth experience.

Maternal satisfaction can be enhanced with the use of intra-partum tools such as mirrors. Labor mirrors can be a low-cost, efficient, and effective way to enhance the maternal experience. Some women who use the labor mirror to visualize pushing efforts self-report an increase in focus on pushing and enhanced overall experience. Further research is recommended. Future projects may be aimed at assessing women's reasons for not using the mirror and comparing labor mirror use to non-users with respect to pushing efforts and maternal satisfaction. Intra-partum mirror use may not be widely and consistently offered. A renewed emphasis on nursing awareness and education related to the benefits of mirror use is indicated in order to assure all women are afforded the opportunity to witness their baby's birth.

References

1. Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) (2008) *Nursing Care and Management of the Second Stage of Labor* (2nd edn.), Washington, DC.
2. Allahbadia GN, Vaidya PR (1993) Squatting position for delivery. *J Indian Med Assoc* 91: 13-16.
3. Gardosi J, Sylvester S, B-Lynch C (1989) Alternative positions in the second stage of labour: a randomized controlled trial. *Br J Obstet Gynaecol* 96: 1290-1296.

4. Golay J, Vedam S, Sorger L (1993) The squatting position for the second stage of labor: effects on labor and on maternal and fetal well-being. *Birth* 20: 73-78.
5. Liu YC (1989) The effects of the upright position during childbirth. *Image J Nurs Sch* 21: 14-18.
6. Mayberry L, Wood S, Strange L, Lee L, Heisler D, et al. (2000) Second stage labor Management: Promotion of evidence-based practice and a collaborative approach to patient care. Washington, DC.
7. Terry RR, Westcott J, O'Shea L, Kelly F (2006) Postpartum outcomes in supine delivery by physicians vs nonsupine delivery by midwives. *J Am Osteopath Assoc* 106: 199-202.
8. Lawrence A, Lewis L, Hofmeyr GJ, Dowswell T, Styles C (2009) Maternal positions and mobility during first stage labour. *Cochrane Database of Systematic Reviews* 3: 20-29.
9. Gupta JK, Hofmeyr GJ, Smyth R (2004) Position in the second stage of labour for women without epidural anaesthesia. *Cochrane Database of Systematic Reviews* 1: 62-71.
10. Fenwick L, Simkin P (1987) Maternal positioning to prevent or alleviate dystocia in labor. *Clin Obstet Gynecol* 30: 83-89.
11. Becerra EJ, Lapuente G (2011) Use of the mirror in second stage of labor: evaluation by means of semantic differential. *Index Enferm* 20: 46-50.
12. Brown S, Lumley J (1994) Satisfaction with care in labor and birth: a survey of 790 Australian women. *Birth* 21: 4-13.
13. Simkin P (1991) Just another day in a woman's life? Women's long-term perceptions of their first birth experience. Part I. *Birth* 18: 203-210.
14. Adams ED, Bianchi AL (2008) A practical approach to labor support. *J Obstet Gynecol Neonatal Nurs* 37: 106-115.
15. Stark MA, Rudell B, Haus G (2008) Observing position and movements in hydrotherapy: A pilot study. *J Obstet Gynecol Neonatal Nurs* 37: 116-122.
16. Cheung W, Ip WY, Chan D (2007) Maternal anxiety and feelings of control during labour: a study of Chinese first-time pregnant women. *Midwifery* 23: 123-130.
17. Eriksson C, Westman G, Hamberg K (2006) Content of childbirth-related fear in Swedish women and men-analysis of an open-ended question. *J Midwifery Womens Health* 51: 112-118.