Research Article

The Impact of Delivery Type on Women’s Postpartum Quality of Life: Using a Specific Questionnaire

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Abstract

Background: Type of delivery has impact on women postpartum quality of life (QL). No study has investigated QL of after cesarean section (CS), natural vaginal delivery (NVD) and NVD with water birth as a novel method.

Objectives: The aim of the study was to compare women postpartum QL after three delivery modes in Shiraz hospitals.

Method: This cross-sectional study was conducted on the women after NVD, CS, and NVD with water birth at 2 months postpartum using a standard specific questionnaire of quality of life after child birth. Then, the data were analyzed using descriptive statistics and one-way analysis of variance (ANOVA) in SPSS, version 18.

Results: NVD with water birth had highest mean score for mothers’ feeling toward themselves, physical health, satisfaction with delivery, choice of the delivery method for future pregnancies and global health status compared to the CS and NVD group; however there was no significant association. There was significant association between NVD and CS with less economic burden (P<0.001) and feeling toward sexual intercourse (P=0.012), respectively.

Conclusion: The type of delivery had association with women postpartum QL in two dimension of economic burden and sexual intercourse. It is suggested that pregnant women and obstetricians’ knowledge toward NVD with water birth should be improved through appropriate education in delivery preparing courses.

INTRODUCTION

The rate of Natural Vaginal Delivery (NVD) is decreasing due to the fear of NVD and increasing tendency toward cesarean section (CS) [1]. In 1970s and 80s, the rate of CS increased due to forensic medicine forces on obstetricians to contraindicate the NVD in breech presentation, and also prevalence of instrumental delivery, and an increase in maternal age [2,3]. CS performed following a medical indication is necessary for life-saving [4]. The appropriate rate of CS should be associated with the lowest rate of maternal and perinatal morbidity and mortality[5] it is about 10-15% based on the World Health Organization (WHO) [4]. Researchers also get interested in developing non-pharmaceutical strategies for lowering labor pain [6]. NVD with water birth is a non-pharmaceutical low pain mode of delivery and has the most advantages to mothers, such as increased functional diameter of true pelvis, increased quality of contractions, reduced pain, decreased need for opiates, increased movement for the mother, etc. This type of delivery was introduced in late 1990s [7, 8].

More than 70% of deliveries were carried out through CS in Iran. Fear of labor pain and adverse effects of NVD were leading causes of CS in 92% of cases [9]. This rate was reported to vary from 7% to 22% in Finland, Sweden, and England [7]. In the
United States of America (USA), NVD accounts for 95.5% of all types of deliveries in 1965. This rate decreased to 78.2% in 1995 [10], although no evidence for improvement of the mother and infant health was observed compared to NVD [2].

Type of delivery is one of the most important determinants of quality of life (QOL) of postpartum women[9, 11]. Assessment of QL is of utmost importance. Improving postpartum QL will lead to improvement of QL of mothers, children, individuals, and the community [12]. Approximately, 20-40% of postpartum women suffer from mood and affective disorders [13]. Physical, emotional and social changes in postpartum period critically affect the mothers’ QL as well as her child and family [14]. Postpartum depression impacts the mother's mental health significantly [15]. One of the objectives of “health for all in 21st century” was QL promotion [2]. The WHO has defined QL as: “one’s perception of his/her position in life in the context of the culture and value systems of his/her society, and in relation to his/her goals, expectations, standards and concerns”[16].

Postpartum period is a critical period for mother and her infant. Several studies have investigated and compared various aspects of QL of postpartum women after CS and NVD [12, 14, 17]. Since NVD with water birth have growth in the recent decades; however, no study has investigated QL of postpartum women after water birth or comparing this with CS and NVD and studies on NVD with water birth are scant [8].

This comparative study was conducted to investigate the impact of three types of delivery on QL of postpartum women after NVD with water birth compared to CS and NVD, using a specific questionnaire of quality of life after child birth in Shiraz in the south of Iran. The finding of this study could be useful for health policy to make decisions about delivery services and for families to use better techniques for delivery.

MATERIAL AND METHODS

This cross-sectional study was conducted on the women after NVD, CS, and NVD with water birth at 2 months postpartum in the two public hospitals in June 2012 to Feb-2013 in Shiraz, Iran. Based on the results of the previous studies [18] and considering the significance level of 0.05, a 137-subject sample size was determined for the study. Using statistical formula, the sample size was determined 59 women for vaginal delivery, 39 for water birth and 39 for cesarean section. Sample size was estimated using the following formula:

\[ n = \frac{(z_1 - \frac{\alpha}{2} + z_1 - \beta)^2(\alpha^2 + \alpha^2)}{(\mu_2 - \mu_1)^2} \]

\[ \alpha = 0.05 \quad \beta = 0.2 \quad \kappa = 1.5 \]

As most of women in the city were covered under maternal and child health program in public health centers, we selected the women with vaginal delivery and cesarean section from these centers, using multi-stage sampling method. In the first stage, all health centers in Shiraz were clustered into nine and in each cluster one health center was randomly selected (simple random sampling). Then, within each health center women who had delivered in 2 previous months [17] and had inclusion criteria were selected. And as just there was delivering NVD with water birth service in two public hospitals in Shiraz and due to the limited number all the women who had NVD with water birth in those two hospitals and had inclusion criteria were enrolled in the study. The inclusion criteria of the study were being from Iran, age between 20 and 32 years, being able to read and write, having undergone delivery in a public hospital, and being nulliparous. On the other hand, the exclusion criteria were mother’s suffering from diagnosed psychological and medical problems, infant death or defect, and separation or divorce from one’s spouse.

The specific questionnaire of quality of life after child birth was used in companion with demographic records, Edinburgh Postnatal Depression Scale (EPDS) and Short Form-36 (SF-36) questionnaires. The questionnaire was translated by Torkan in 2005 to Persian and its validity and reliability was confirmed (r=0.85) [2]. So, we use of the some specialist view for more validity of the questionnaire. This questionnaire includes 30 questions in Likert scale (1 as the least and 5 as the highest score for any question) and investigates eight aspects, namely mothers’ emotions toward herself (6 questions), her infant (3 questions), her husband and others (8 questions), sexual intercourse (3 questions), physical health status (7 questions), the impact of type of delivery on economic status (1 question), satisfaction with delivery (1 questions), and further selection of this type of delivery (1 question) [2]. The questioners filled by participants after 2 month of delivery where they refer to health center for child vaccination.

Ethical Considerations

Permission for this study was through the ethics committee of Shiraz University of Medical Sciences (SUMS), Shiraz, Iran. Other ethical issues in this study involved the assurance of confidentiality and anonymity of the participants. All participants were informed about the purpose and design of this research, and that their participation was voluntary.

Minimum, maximum, and mean scores of the quality of life were calculated through descriptive statistics. Besides, one way analysis of variance (ANOVA) was used to determine the differences among the three delivery modes regarding the quality of life scores. We used SPSS, version 13 and the level of significance was considered as 0.05.

RESULTS

In this study 137 participants were studied. The mean of cost of the three type modes presented in Table 1. According to this table, water birth mode had the higher cost for women.

As shown in table 2, the mean score of each delivery mode presented and its association with other modes. The result of the study showed that NVD with water birth had the highest mean score of QL (121.35); however, there was no significant differences between three modes of delivery (P>0.485). Results indicated the highest mean score for women who had NVD with water birth in aspects of mothers’ feeling toward herself, physical health status, satisfaction with delivery and choice of

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**Table 1: Mean of delivery cost in Shiraz city in 2013**

<table>
<thead>
<tr>
<th>Delivery Type</th>
<th>Mean Cost (µ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal</td>
<td>µ1=21.66</td>
</tr>
<tr>
<td>Cesarean</td>
<td>µ2=23.38</td>
</tr>
<tr>
<td>NVD with water</td>
<td>µ3=25.14</td>
</tr>
</tbody>
</table>

**Table 2: Comparison of mean scores of quality of life**

<table>
<thead>
<tr>
<th>Delivery Type</th>
<th>Psychological</th>
<th>Social</th>
<th>Physical</th>
<th>Emotional</th>
<th>Self-Expectation</th>
<th>Infant</th>
<th>Husbands &amp; Others</th>
<th>Sexuality</th>
<th>Overall QOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal</td>
<td>120.43</td>
<td>102.43</td>
<td>134.43</td>
<td>105.43</td>
<td>112.43</td>
<td>110.43</td>
<td>108.43</td>
<td>100.43</td>
<td>115.43</td>
</tr>
<tr>
<td>Cesarean</td>
<td>118.43</td>
<td>100.43</td>
<td>132.43</td>
<td>104.43</td>
<td>111.43</td>
<td>108.43</td>
<td>106.43</td>
<td>102.43</td>
<td>114.43</td>
</tr>
<tr>
<td>NVD with water</td>
<td>124.43</td>
<td>106.43</td>
<td>138.43</td>
<td>108.43</td>
<td>115.43</td>
<td>114.43</td>
<td>112.43</td>
<td>104.43</td>
<td>120.43</td>
</tr>
</tbody>
</table>
the delivery method for future pregnancies. The results of one-way ANOVA revealed a significant difference among the three types of delivery concerning sexual intercourse (P<0.012) and Post Hoc test (Tukeys-b) showed a significant relationship between CS and NVD (P<0.021). In addition, the NVD group had the highest mean score of mother’s feeling toward her husband and economic status. Statistical analysis using one way-ANOVA indicated a statistically significant difference between economic status and three types of delivery (p<0.001) and Post Hoc test (Tukeys-b) showed a significant relationship between NVD and CS with water birth (P=0.041). (Table 2)

DISCUSSION

According to results, NVD with water birth had the highest mean score of QL albeit it was not significant between three groups. Since this method have several benefit such as increased functional diameter of true pelvis, increased quality of contractions and reduced pain [7, 8], it may be lead to more QL in women.

NVD with water birth had the highest mean score for good self-perception, physical health, satisfaction with delivery and further selection of this type of delivery; however, there was no statistical significant. The highest mean score for good self-perception indicated that women undergoing NVD with water birth were pleased with their maternal role and appearance after child birth. Chaichan indicated that water birth delivery had the most advantage [8]. A study on 2000 women who had experienced NVD with water birth indicated that decreased hemorrhage and episiotomy lead to physical health promotion [18]. Less pain and decreased duration of delivery brought about a pleasing experience of delivery for women with NVD with water birth [7, 8]. This led to greater satisfaction with delivery and increased the probability of further selection of this type of delivery.

Our findings showed that the CS group had the highest mean score for the mother’s emotion toward her infant and sexual intercourse which is related to physiological situation. Sadat et al.’s (2008) findings indicated the higher mean score for sexual intercourse at 2 months postpartum in the CS group in comparison to the NVD group [19]; this confirmed the findings of our study. Moreover, the CS group had a higher quality of sexual intercourse relationship than the NVD group with episiotomy [20]; this was also consistent with the findings of the present study. Consistent with our findings, Torkan et al indicated that women undergoing CS had a better emotional relationship with their infants in comparison to the NVD group [2].

The present study showed that women undergoing NVD with water birth suffer additional economic burden more than CS (more than three times) and NVD groups (more than five times) because NVD with water birth process was not coverage with insurance. In Iran the NVD expenditure was less than other methods and after Jun 2014 NVD has been free in public hospitals. Sadat and Torkan indicated a higher economic status in the NVD group than the CS group [2, 20].

A study compared postpartum quality of life after CS, NVD and assisted vaginal delivery and showed a significantly lower status for postpartum general health at seven weeks postpartum in women undergoing CS or assisted vaginal deliveries than women with NVD, which was inconsistent with the findings of the present study. Additionally, women with assisted vaginal delivery experienced worse sexual intercourse relationship and urinary functioning [17]. Kalani stated that women undergoing NVD had a higher quality of life in physical and mental aspects than the

| Table 1: The mean of cost of NVD, CS and water birth in study sample in 2012-13. |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| (p value)       | maximum         | minimum         | SD              | The mean of cost | frequency |
|                 |                  |                  |                 |                  | variable  |
|                 |                  |                  |                 |                  | Delivery method |
| 000/.           | 513360           | 224600           | 5483            | 323308          | 59        | NVD               |
|                 | 2927410          | 1118660          | 394373          | 1642584         | 39        | Water birth      |
|                 | 597960           | 466380           | 23580           | 522936          | 39        | CS                |

| Table 2: The mean score for various aspects of quality of life after child birth. |
|-----------------------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Quality of life dimension                     | Type of delivery                | NVD                            | NVD with water birth             | CS                              | P value* |
|                                              | Mean ±SD                        | Mean ±SD                        | Mean ±SD                        |
| Mothers’ feeling toward her self             | 23.17±4.06                      | 24.85±2.71                      | 23.9±3.45                      | 0.07                            |
| Mothers’ feeling toward her child            | 14.03±1.47                      | 14.0±1.07                       | 14.13±1.26                     | 0.972                           |
| Mothers’ feeling toward her husband          | 34.02±4.49                      | 32.92±4.05                      | 33.4±4.82                      | 0.48                            |
| Mothers’ feeling toward sexual intercourse   | 9.98±3.06                       | 10.73±2.51                      | 11.75±2.84                     | 0.012                           |
| Mothers’ feeling toward her physical health  | 25.30±4.97                      | 26.78±3.8                       | 24.5±3.86                      | 0.063                           |
| Relationship of delivery with economic status | 4.17±1.09                       | 3.98±1.05                       | 4.15±0.8                       | 0.000                           |
| Satisfaction with delivery                  | 3.85±0.98                       | 4.10±0.87                       | 3.93±0.89                      | 0.417                           |
| Choose of the delivery method for future pregnancies | 3.65±1.28                      | 3.98±1                           | 3.75±1.1                      | 0.388                           |
| Total Quality of life                        | 118.17±14.77                    | 121.35±10.96                    | 119.5±11.98                    | 0.485                            |
| *Test: One-way ANOVA                        |                                 |                                 |                                 |                                 |
CS group [12]; however, in the present study water birth had a higher quality although there were no significant differences. In general, it could be concluded that the type of delivery is one of the most important determinants of postpartum quality of life. Consistent with previous studies, the present study indicated that the type of delivery impacts the postpartum quality of life.

Limitation

Limited number of studies in NVD with water birth for discussion is another limitation in this study. Small sample size was another limitation of the study because of limited number of women with water birth delivery.

CONCLUSION

Women with NVD with water birth had higher mean scores of total QL; although, this was no statistically significant with other methods. So it is advisable that pregnant women and obstetricians’ knowledge toward NVD with water birth should be improved through appropriate education in delivery preparing courses. In addition, it is recommended to health policy maker to coverage water birth costs under insurance coverage.

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