

**The relationship between quality of life and methods of delivery: A systematic review and meta-analysis**Nazanin Rezaei<sup>1</sup>, Zahra Tavalaei<sup>2</sup>, Kourosh Sayehmiri<sup>3</sup>, Nasibeh Sharifi<sup>4</sup>, Salman Daliri<sup>5</sup><sup>1</sup> Department of Midwifery, Faculty of Nursing and Midwifery, Ilam University of Medical sciences, Ilam, Iran<sup>2</sup> Department of Midwifery, Faculty of Nursing and Midwifery, Ilam University of Medical Sciences, Ilam, Iran<sup>3</sup> Psychosocial Injuries Research Center, Ilam University of Medical Sciences, Ilam, Iran<sup>4</sup> Ph.D. of Reproductive Health, Assistant Professor, Department of Midwifery, Faculty of Nursing and Midwifery, Ilam University of Medical Sciences, Ilam, Iran<sup>5</sup> M.Sc. of Epidemiology, School of Health, Ilam University of Medical sciences, Ilam, Iran**Type of article:** Meta-analysis**Abstract**

**Background and aim:** Some physical, emotional and social changes arise in mothers during the postpartum periods which can affect the quality of life (QOL) of the mother and family. Given the importance of the quality of life in the postpartum period and its influencing factors such as method of delivery, the present study aimed at investigating the relationship between the quality of life and methods of delivery in the world, using a systematic review and meta-analysis method.

**Methods:** The present study is a systematic review and meta-analysis on the relationship between aspects of quality of life and method of delivery in the world conducted in Persian and English language articles published by the end of 2015. For this purpose, the databases of Medlib, SID, Scopus, ISI Web of Science, PubMed, Google scholar, Irandoc, Magiran and Iranmedex were searched using key words and their compounds. The results of studies were combined using the random effects model in the meta-analysis. Heterogeneity of studies was assessed using I<sup>2</sup> index and Cochran test and data were analyzed using STATA Version 11.1 and SPSS Version 16.

**Results:** Based on the results of the meta-analysis of studies, the aspect of physical functioning had the highest quality of life mean score in women with vaginal delivery: 74.37 (95% CI: 67.7-81) and mental health had the highest QOL mean score in women with cesarean delivery: 65.8 (95% CI: 62.7-69). Also, based on the time elapsed since delivery, mental health had the highest mean score in less than 1 month, 2 months and 4 months' postpartum. Physical pain had the highest mean score 6 months after giving birth, and mental functioning in 8 months after giving birth.

**Conclusions:** The results of the present meta-analysis showed that the mean scores for most dimensions of quality of life in women with vaginal delivery were higher than in women with cesarean delivery.

**Keywords:** Quality of life, Method of delivery, Systematic review, Meta-analysis

**1. Introduction**

Quality of life is the feeling that individuals have in regard to their living condition in terms of a cultural and value system based on their goals, expectations, standards and interests, which has different dimensions including physical and psychological dimension, level of independence, social and environmental communications and personal beliefs (1-3). Quality of life has different dimensions of physical, mental, emotional, environmental and social aspects. Measuring quality of life and considering living conditions, environmental-social factors, visions, individuals' goals and values of the community have an important role in the planning of health promotion (2). Quality of life can be evaluated in all life stages including during the pregnancy period and after delivery (4, 5). Many changes occur during pregnancy and postpartum in dimensions of physical, mental and social health and overall quality of life in

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women (6-10). Women in postpartum face multiple physical and psychological disorders. Approximately 40% of pregnant women worldwide every year (about fifty million) suffer from health problems during pregnancy or in the postpartum period, and 11% suffer from prolonged or severe complications, sometimes continues until the end of life. Many complications following natural delivery and cesarean delivery have been identified over recent years and emphasize on undesirable side effects, and consequences such as anemia, infections, bleeding as well as sexual dysfunction, back pain, perineal pain, constipation, and postpartum depression have been proven. These complications can have adverse effects on the mother and baby in the postpartum period (11, 12). Mothers' experiences of postpartum problems affect the quality of life of her and her child (13). In postpartum, some mothers suffer from fatigue, lethargy, sleep problems, breast tenderness, physical pain, sexual difficulties and postpartum distress (14). Postpartum is an important period for mothers and babies. One of the factors affecting the quality of life at this time is the method of delivery and the elapsed postpartum time (15). Based on the experience of researchers, many mothers and indeed doctors, prefer cesarean delivery to vaginal delivery because they believe it is easier and feel healthier and will have a better quality of life (16). In the study of Taheri Kalani et al., the physical dimension of quality of life in women with vaginal delivery was more desirable than in women with cesarean delivery (17). Also, this level had the same results during the 8 months after delivery (17). In the study of Abedian et al., the physical and mental health dimensions of quality of life within 6-8 weeks postpartum were more desirable in women with vaginal delivery than in women with cesarean delivery, but no significant difference was observed in social and overall health aspects (16). Studies conducted around the world have reported mixed results about the relationship between dimensions of quality of life and method of delivery and the elapsed postpartum time. Due to controversies about the role of mode of delivery on quality of life as well as the fact that improving the quality of life of mothers in the postpartum period guarantees the child's health and improves the quality of life of the child, family and society, measuring quality of life is important, and reaching a general conclusion can be influential in the final decision to determine the method of delivery to suggest and recommend the preferred method to pregnant women and health personnel. Therefore, the present study was aimed at investigating the physical and mental dimensions of quality of life based on method of delivery and the elapsed postpartum time around the world using a meta-analysis.

## **2. Material and Methods**

### **2.1. Research design and search strategy**

This study was a systematic review and meta-analysis on the relationship between dimensions of quality of life and method of delivery around the world. The results of this study were obtained based on Persian and English-language articles published in Persian and English Iranian and international journals. In this study, all published articles between the years of 2000 to the end of 2015 were selected by searching the databases of Medlib, SID, Scopus, ISI Web of Science, PubMed, Google scholar, Irandoc, Magiran and Iranmedex. Articles were searched using the Persian and English key words such as quality of life, method of delivery, delivery, physical function, bodily pain, role - physical, general health, vitality, mental health, role - emotional, social function, vaginal delivery, cesarean section, and the time elapsed since birth, in Iran and around the world done individually and combined. Article selection and data extraction was done by two researchers independently. The articles were first searched directly using the keywords in the databases, then, for additional searches, the references in the articles were manually entered into Google search, and related articles were extracted.

### **2.2. Selection criteria**

#### **2.2.1. Inclusion criteria:**

The inclusion criteria were: 1) English and Persian language articles conducted globally between 2000 and 2015 on the quality of life of pregnant women, 2) Studies have been done in all women who have been given birth, 3) Articles which after qualitative evaluation, received scores above 20.

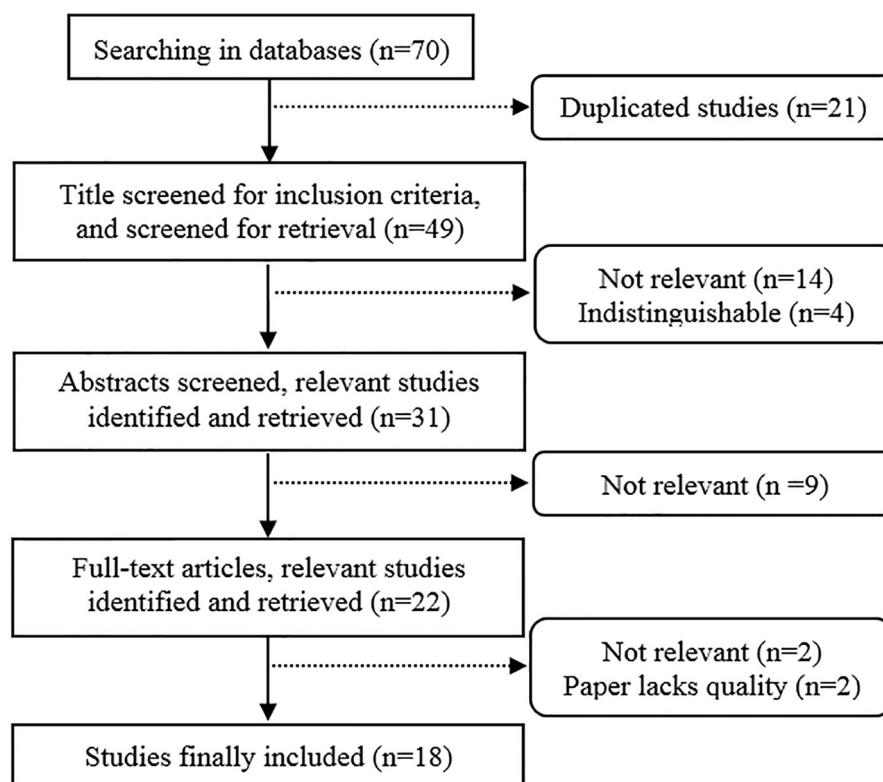
#### **2.2.2. Exclusion criteria**

The following were set as the exclusion criteria: 1) Studies that have been rated less than 20 after assessment of quality score, 2) In specific population groups done (such as women with special diseases), 3) On quality of life in women with childbirth, but the data to estimate the average of QOL dimension were not available, 4) Studies were conducted in an interventional, qualitative, review or series of cases.

### **2.3. Study selection and data extraction**

First, all Persian and English language articles related to quality of life in women who gave birth between 2000 and 2015 were collected. The articles were first searched directly using the keywords in the databases, then, for additional searches, the references in the articles were manually entered into Google search, and related articles were

extracted. After completing the search, a list of abstracts was prepared. After hiding the characteristic of the articles, such as the name of the authors, the name of the magazine, etc., the full text of the articles was provided to two trained and proficient researchers. Each article was reviewed by two individuals independently, and if two articles were rejected by the two people, the reason was mentioned and, in case of disagreement, the article was judged by a third person. In this regard, 70 articles related to the dimensions of QOL and method of delivery were identified, among which 21 papers were excluded due to being replicate and 27 articles were excluded due to non-relevance. After reviewing the abstracts, 4 articles that lacked the required information or the acceptable quality were excluded from the study. Finally, 18 articles met the inclusion criteria and were included in the meta-analysis (Figure 1). The Strobe checklist (Strengthening the reporting of observational studies in epidemiology) was used to check the quality of articles (16). The required data was extracted using a pre-prepared checklist that included sample size, study location, time of study, type of study, the mean of dimensions of quality of life, method of delivery, the time elapsed since birth, and SD.



**Figure 1.** Results of the systematic literature search

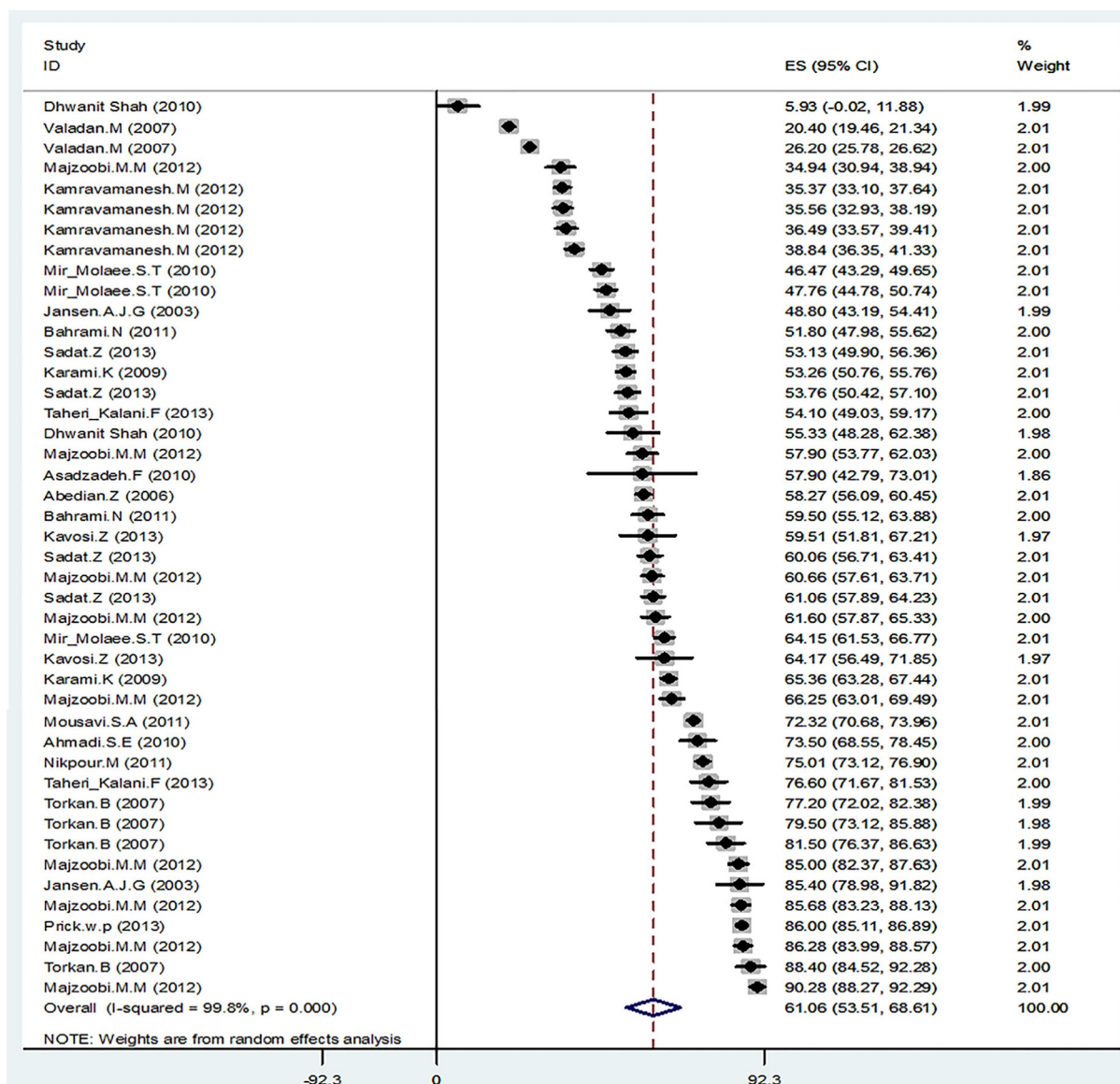
#### 2.4. Statistical Analysis

The weighted mean and the normal distribution were used to combine mean score of quality of life based on the standard deviation of studies. The I<sup>2</sup> index and Cochran's test were used for heterogeneity between results. Egger's test was used to assess publication bias. Meta-regression was used to investigate the relationship between effect size and year of study and explore heterogeneity among studies (18). Data were analyzed using STATA Version 11.1 and SPSS Version 16 (SPSS Inc., Chicago, Illinois, USA).

#### 3. Results

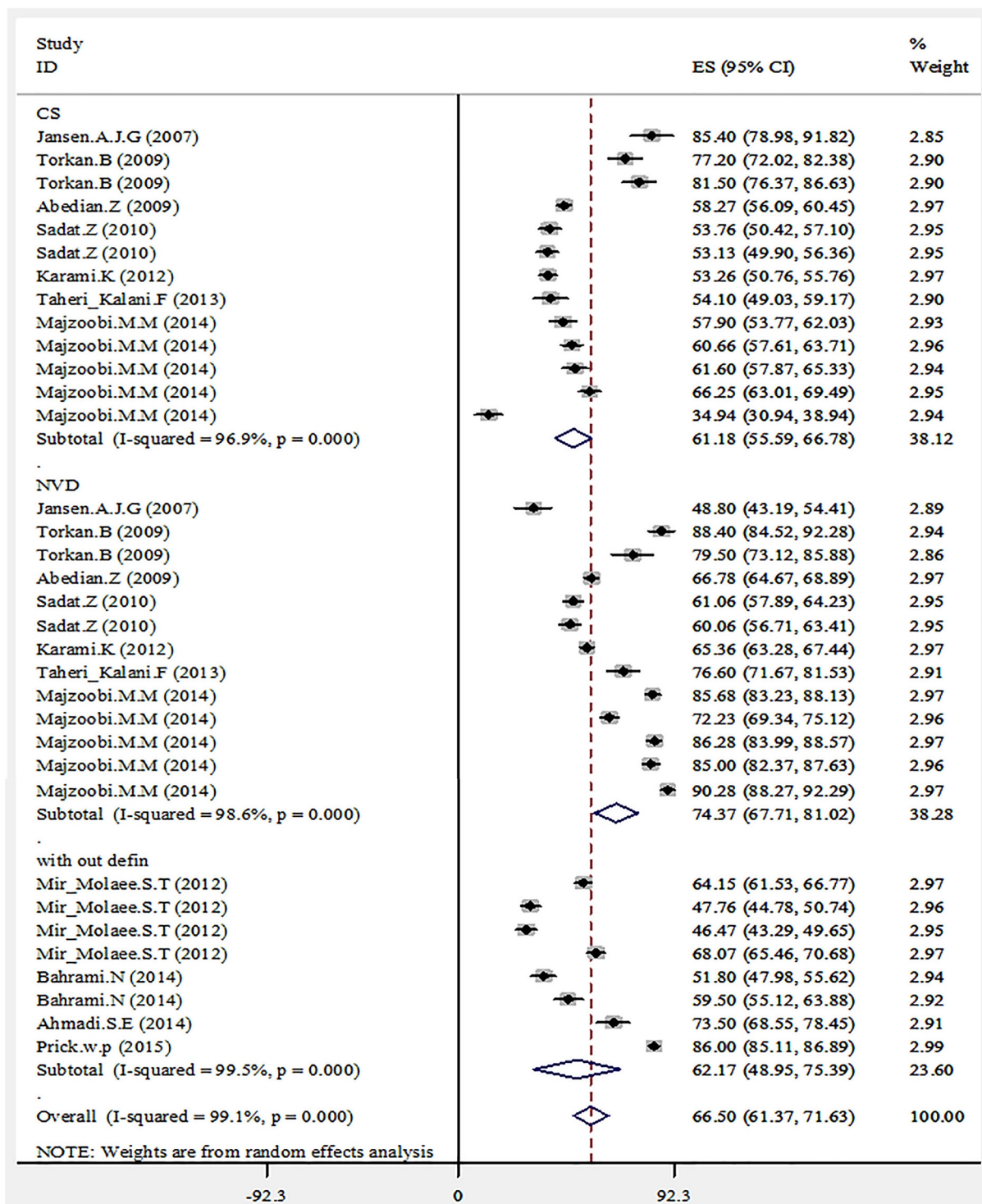
In the first phase of the search, among the 70 articles, 18 articles had the inclusion criteria for the study with a sample size of 4,422 people and each study had an average sample size of 245 individuals. Articles related to the topic of research had been carried out in the period from 2001 to 2015. Among the studies, there were 15 articles in Iran and 3 articles in other countries, 12 in sf-36 questionnaires and 5 in the WHO questionnaire. Furthermore, 9 studies were descriptive-analytic, 7 were prospective and 2 were retrospective studies. Specifications of articles under review are presented in Table 1. Based on the results of the meta-analysis on studies, the mean score of the physical functioning dimension of QOL in women after delivery was estimated to be 61.6 (95% CI: 53.51-68.61)

(Figure 2). Also, the mean score for limitation in role play due to physical problems 55.6, physical pain 63.88 and general health 62.48, vitality 61.09, mental health 66.57, limitation in role play due to emotional problems 60.63 and social health 62.27 in all women giving birth (Table 2).

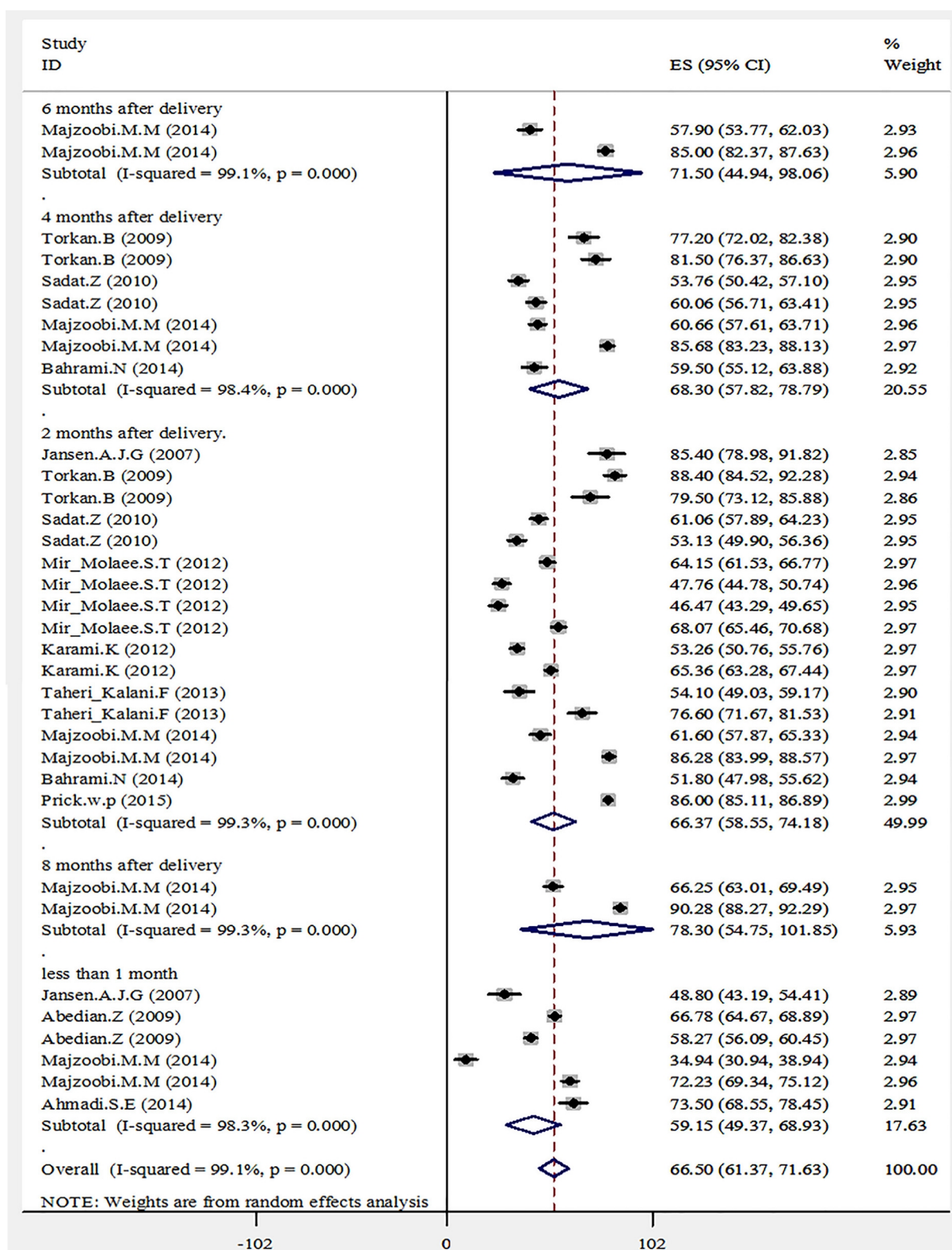


**Figure 2.** The mean score of physical functioning of its 95% CI in the reviewed articles based on random effects model. The midpoint of each segment showed the mean score and the segment's length showed the 95% CI of each study. Rhombus shape indicated the mean score for all studies.

Based on the delivery method, the mean physical function score in women with vaginal delivery was 74.37 and in women with cesarean delivery 61.18 (Figure 3). The mean scores for role limitation due to physical problems in vaginal delivery and cesarean section were 55.6 vs. 49.8, physical pain 64 vs. 64.4, and general health 71.3 vs. 64. Mean scores for other areas of quality of life were presented in Table 2. The mean score of physical functioning dimension based on the elapsed time of delivery in less than 1-month postpartum period was 59.15 (95% CI: 49.37-68.93), it was 66.37 two-months' postpartum (95% CI: 58.55-74.18), 68.5 four months after delivery (95% CI: 57.82-78.79), 71.5 six months after delivery (95% CI: 44.94-98.06), and 78.5 eight months after delivery (95% CI: 54.75-100) (Figure 4). Regarding the mean score of mental health based on the elapsed postpartum time, this percentage was 70.31 in less than 1-month postpartum period, 69.28 two months postpartum, 69.58 four months after delivery, 61.94 six months after delivery, 67.57 eight months after delivery (Table 2).



**Figure 3.** The mean physical functioning score by type of delivery and 95 percent of those surveyed in the study based on a random effects model. The midpoint of each segment and the segment average estimate of 95 percent in every study shows. Studies show the average scores for the diamond mark.



**Figure 4.** The mean score of physical functioning of quality of life based on the elapsed postpartum time and its 95% CI in the reviewed articles based on random effects model. The midpoint of each segment showed the mean score and the segment's length showed the 95% CI of each study. Rhombus shape indicated the mean score for all studies.

The average general health score in the total number of women who gave birth in the first month after delivery was 68.9, two months after delivery 64.3, four months after delivery, 67.6 and eight months after delivery, 60.3. The mean scores of other areas were based on the elapsed time. The delivery is presented in Table 2. After delivery, physical functioning was the most desirable QOL dimension in women. In women with cesarean delivery, only the vitality and joy dimensions were better and other areas were better in vaginal delivery in comparison to cesarean delivery (Table 2). The results of meta-regression analysis (Figure 5) showed that with increasing the years of the study, the mean scores decreased, but this relationship was not statistically significant ( $p=0.07$ ). Also, the mean scores in relation to the sample size showed that with increasing sample size, the mean scores decreased, which was not statistically significant ( $p=0.068$ ) (Figure 6). Egger test and funnel plot were used to study the release bias (Figure 7). Since the funnel is symmetric, it can be stated that the propagation bias did not occur in this study.

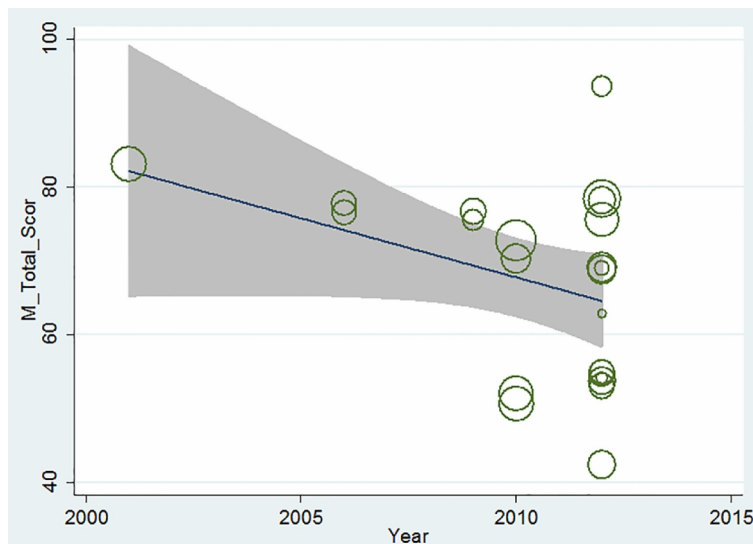
**Table 1.** Characteristics of included reports.

| Ref. no. | Year of study | Location of study | Sample size | Questionnaire | Key findings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Type of study        |
|----------|---------------|-------------------|-------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 16       | 2010          | Amol              | 155         | WHO-QOL       | Average physical and mental health between the two groups of vaginal delivery and caesarean section two weeks after birth there was a significant difference ( $p<0.05$ ).                                                                                                                                                                                                                                                                                                                         | Cross-sectional      |
| 19       | 2014          | Tehran            | 86          | sf-36         | It was found that the normal vaginal delivery (NVD) group had better condition on physical functioning, role limitation due to physical problems, bodily pain and social functioning, while the CS group reported better status on general health, vitality, role limitation due to problems, and mental health.                                                                                                                                                                                   | Cross-sectional      |
| 20       | 2014          | Dezfool           | 60          | sf-36         | The mean scores of various dimensions of the sf-36 were significantly higher at 12 to 14 weeks than at six to eight weeks ( $p<0.001$ ). The postpartum mean depression score was significantly higher at six to eight weeks than at 12 to 14 weeks ( $p<0.001$ ).                                                                                                                                                                                                                                 | Cross-sectional      |
| 21       | 2001          | Paul              | 132         | WHO-QOL       | The average overall quality of life between the two groups was not statistically significant ( $p<0.05$ ).                                                                                                                                                                                                                                                                                                                                                                                         | Prospective          |
| 22       | 2012          | Khorram-Abad      | 146         | WHO-QOL       | In both vaginal delivery and caesarean section postnatal statistically significant difference was observed between the two groups in terms of physical and mental health ( $p<0.05$ ). But in the area of public health and overall quality of life, there was no significant difference ( $p>0.05$ ).                                                                                                                                                                                             | Prospective          |
| 23       | 2014          | Hamadan           | 210         | Sf-36         | Quality of life was significantly higher in women with vaginal delivery, compared to women with cesarean section in all periods including one week (68.77 vs. 42.44), two months (69.11 vs. 54.76), four months (78.19 vs. 53.02), six months (75.62 vs. 54.94), and one year (78.43 vs. 53.77) after delivery.                                                                                                                                                                                    | Retrospective cohort |
| 24       | 2012          | Tehran            | 100         | Sf-36         | Significant differences in the areas of physical and mental health, public, social and general health and quality of life in the two groups ( $p>0.05$ ).                                                                                                                                                                                                                                                                                                                                          | Cross-sectional      |
| 25       | 2015          | Dutch             | 1391        | Sf-36         | The mean scores of Physical function 86, Role-physical 60, Bodily pain 61, General health 78, Vitality 60, Social function 78, Role-emotional 84 and Mental health 82                                                                                                                                                                                                                                                                                                                              | Cross-sectional      |
| 26       | 2010          | Kashan            | 150         | Sf-36         | A higher score on the scale of physical functioning and role limitations due to physical problems two months after delivery and in the dimensions of physical functioning, social functioning and mental health four months after delivery in normal vaginal delivery. The mean scores for mental health and social functioning within two months significantly increased in the vaginal delivery group.                                                                                           | Prospective          |
| 17       | 2013          | Ilam              | 50          | Sf-36         | Results showed that the mean scores of the physical quality of life at birth by vaginal delivery 76.6 and cesarean section 54.1 was higher than the average score. The mean emotional quality of life in the vaginal delivery group was 67.6, which was higher than the average rate of delivery by cesarean section 63.6.                                                                                                                                                                         | Retrospective        |
| 27       | 2009          | Esfahan           | 50          | Sf-36         | However, comparing the mean scores between the normal and caesarean delivery groups, the results showed that in general, the normal vaginal delivery group had a better quality of life for almost all subscales in both assessment times. The differences were significant for vitality (mean score 62.9 vs. 54.4 $p=0.03$ ) and mental health (mean score 75.1 vs. 66.7, $p=0.03$ ) at first assessment and for physical functioning (mean score 88.4 vs. 81.5, $p=0.03$ ) at second evaluation. | Prospective          |

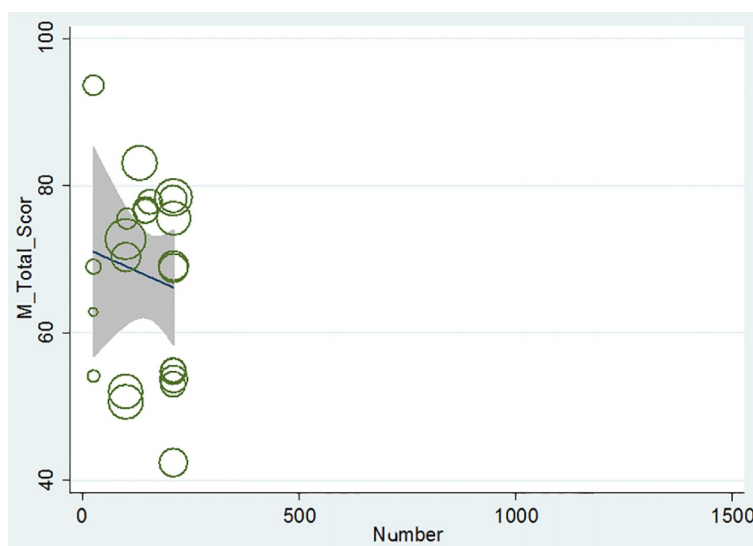
|    |      |              |     |         |                                                                                                                                                                                                                                                                                                                                                                 |                 |
|----|------|--------------|-----|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 28 | 2007 | Netherlands  | 141 | SF-36   | The average physical health score of 48.4 in the first week after delivery and 6 weeks postpartum were 85.4.                                                                                                                                                                                                                                                    | Prospective     |
| 29 | 2014 | Kermanshah   | 268 | SF-36   | Scores of physical functioning ( $p=0.00$ ), Role -Emotional ( $p=0.021$ ) and vitality ( $p=0.032$ ) in women with vaginal delivery were more than in women by caesarian section.                                                                                                                                                                              | Cross-sectional |
| 30 | 2011 | Amol         | 290 | WHO-QOL | At 8 weeks post -partum in the NVD group the mean score of quality of life was 75.01 for physical domain that was significantly higher than the mean score of QOL for physical domain in caesarian group 70.54.                                                                                                                                                 | Prospective     |
| 11 | 2013 | Ardebil      | 300 | WHO-QOL | The results showed that quality of life aspects scores in normal vaginal delivery were $68.4 \pm 11.25$ and more than cesarean section ( $57.9 \pm 4.29$ ). Also, mean score of mental life quality domain in normal vaginal delivery was $79.32 \pm 12.14$ , which was slightly higher than the cesarean section group with a mean score of $77.41 \pm 13.6$ . | Cross-sectional |
| 31 | 2015 | Bandar Abbas | 400 | SF-36   | The mean score for quality of life in pregnant women was $58.2 \pm 14.89$ . Based on the results, among the 8 dimensions of quality of life, mental health and social functioning had the highest mean scores of 71.11 and 69.28, and physical problems and psychological problems had the lowest scores of 32.49 and 48.78, respectively.                      | Cross-sectional |
| 32 | 2015 | Shiraz,      | 137 | SF-36   | The results showed that the NVD group had the highest mean score in physical health domains; the women with water birth had the highest mean score in mental health domains and total QOL. Regarding postpartum QOL, the results of one-way ANOVA showed no statistically significant differences between the three modes of delivery.                          | Cross-sectional |
| 33 | 2013 | Shahroud     | 356 | WHO-QOL | In primiparas, the mean global QOL scores for the cesarean and vaginal delivery groups were $67.65 \pm 12.7$ and $72.12 \pm 11.8$ , respectively. Also, the scores for the physical, psychological and social domains of QOL as well as the global score of QOL were higher in the vaginal delivery group than the cesarean group ( $p < 0.05$ ).               | Prospective     |

**Table 2.** Mean score of the domain of quality of life in natural and cesarean delivery and the postpartum period has elapsed.

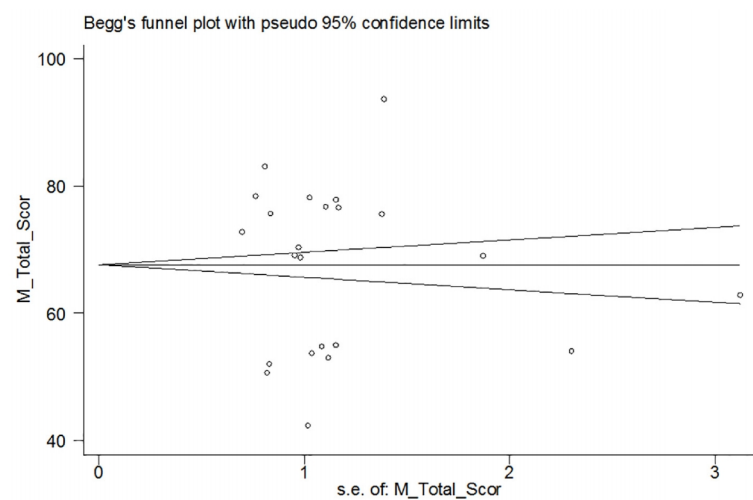
| Variable                  | All Of women after delivery mean (95% CI) | Normal Vaginal delivery (NVD) mean (95% CI) | cesarean delivery (CS) mean (95% CI) | Less than after delivery mean (95% CI) | 2 months after delivery mean (95% CI) | mean (95% CI) 4 months after delivery | mean (95% CI) 6 months after delivery | mean (95% CI) 8 months after delivery |
|---------------------------|-------------------------------------------|---------------------------------------------|--------------------------------------|----------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Physical Functioning (PF) | 61.06 (53.51-68.61)                       | 74.37 (67.7-81)                             | 61.18 (55.6-66.8)                    | 59.15 (49.4-68.9)                      | 66.37 (74.2-58.6)                     | 68.3 (78.8-57.8)                      | 71.5 (45-98.06)                       | 78.3 (54.8-100)                       |
| Role -Physical (RP)       | 55.6 (49.5-61.7)                          | 64.1 (56.5-71.1)                            | 49.8 (40.6-59)                       | 53.1 (35.6-70.6)                       | 56.4 (48.5-64.3)                      | 49.8 (37-62.6)                        | 66.3 (34.7-97.9)                      | 67.5 (26.7-100)                       |
| Bodily Pain (BP)          | 63.88 (59.4-68.3)                         | 64.0 (55.0-73.0)                            | 64.4 (55.8-65)                       | 46.1 (30.1-62.0)                       | 67.2 (60.0-74.3)                      | 67.7 (57.4-78.0)                      | 72.2 (60.0-84.4)                      | 71.9 (49.2-94.6)                      |
| General Health (GH)       | 62.48 (52.7-72.26)                        | 71.3 (68.6-74.0)                            | 64.0 (59.1-69.0)                     | 68.9 (61.6-76.3)                       | 64.3 (58.1-70.5)                      | 67.6 (61.5-73.6)                      | 67.5 (49.8-85.2)                      | 60.3 (39.9-80.7)                      |
| Vitality (VT)             | 61.09 (49.63-72.56)                       | 58.9 (56.0-61.8)                            | 60.7 (57.2-64.1)                     | 57 (46.7-67.4)                         | 60.2 (58.6-61.9)                      | 60.5 (58.0-62.9)                      | -                                     | -                                     |
| Mental Health (MH)        | 66.57 (58.47-74.57)                       | 71.0 (68.7-73.4)                            | 65.8 (62.7-69.0)                     | 70.3 (64.2-76.4)                       | 69.3 (63.9-74.7)                      | 69.6 (66.0-73.1)                      | 62.0 (57.2-66.7)                      | 67.6 (57.3-77.8)                      |
| Role -Emotional (RE)      | 60.62 (55.92- 68.32)                      | 70.9 (62.8-78.9)                            | 49.0 (40.0-58.0)                     | 62.2 (30.5-93.9)                       | 62.6 (50.9-74.3)                      | 55.8 (44.0-67.6)                      | 64.5 (31.1-97.7)                      | 61.9 (10.7-100)                       |
| Social Functioning (SF)   | 64.27 (56.06- 72.48)                      | 64.9 (55.6-74.4)                            | 62.5 (56.0-69.0)                     | 57.4 (45.7-69.0)                       | 63.4 (54.8-72)                        | 67.5 (62.9-72.0)                      | 69.3 (52.3-86.3)                      | 70.8 (59.4-82.3)                      |



**Figure 5.** Metaregression Score. The average quality of life score based on the year of the studies



**Figure 6.** Metaregression chart. The mean of quality of life scores based on the sample size studied in the studies



**Figure 7.** Funnel graph. Mean quality of life score in the studies

#### 4. Discussion

Based on the results of 18 studies carried out worldwide on the relationship between dimensions of quality of life and method of delivery and the elapsed time postpartum, the results showed that among women's total population and in women with vaginal delivery, physical functioning had the highest QOL score and mental health had the highest QOL score in women with cesarean delivery. Also, based on the elapsed time from delivery, mental health had the highest mean scores in less than 1 month, 2 months and 4 months' postpartum. Physical pain had the highest mean score 6 months' postpartum and physical functioning had the highest mean score 8 months' postpartum. Based on the results of studies in the dimension of physical functioning, women with vaginal delivery had the highest score. Also, the score of physical functioning dimension of quality of life increased by enhancing the elapsed time postpartum so that the lowest score was in the first months after delivery and the highest score was in 8 months postpartum. Similar results were obtained in social functioning dimension and the dimension of limitation to do a role due to physical problems. The study of Taheri et al. showed that the mean scores of physical functioning and limitation to do a role were higher in women with vaginal delivery than cesarean delivery due to physical problems and these aspects' scores increased by enhancing the elapsed time postpartum (17). Similar results were found in the studies of Rowlands and Redshaw that are consistent with the findings of the present study (16, 17, 34). In the study of Asadzadeh et al., the mean score of physical health in women with vaginal delivery was 68.4 and in women with cesarean delivery was 57.9, which shows that women with vaginal delivery have a better status (11). Nikpour et al. showed that the mean score of physical health in women with vaginal delivery (75.01) versus women with cesarean section (70.54) is significantly higher than that, which is statistically significant ( $p=0.0001$ ) (12). Jansen et al. showed that the incidence of back pain, stomach pain, pain at the site of suturing, fatigue, constipation and burning in women with cesarean delivery was higher than vaginal delivery during the 8 weeks postpartum. Existence of physical pain, the need for higher medical care, and sleep disorders can lead to a decrease in energy levels and abilities of the mother to conduct daily life activities. The total of these factors probably the total of these factors can be effective factors in reducing the mean scores of physical dimension in the cesarean delivery group compared with the vaginal delivery group (35). The mean scores in dimensions of public health and mental health were higher in women with vaginal delivery than in women with cesarean delivery. However, based on the elapsed time postpartum, as the time had increased, the scores of public health and mental health dimensions had reduced so that these dimensions had the highest scores in less than a month after delivery and the lowest scores were 8 months after delivery. The reason might be the economic and social problems related to child during next steps of life. The study of Majzoubi et al. showed that the scores of public health and mental health were higher in women with vaginal delivery than women with cesarean delivery (23). Also, by enhancing the amount of elapsed time postpartum, these scores decreased or remained constant, which is consistent with the results of our study (23). In the study of Asadzadeh et al., there was no significant difference in mental health between women with vaginal delivery and women with cesarean delivery (71.22 vs. 69.64%) (11). In the study of Jarad et al., there was no significant difference in the mean score of mental health in women with vaginal delivery and cesarean delivery (28). In the study of O'Coner et al., the rate of delivery satisfaction and the birth experience in women with vaginal delivery was better than cesarean delivery, and women with vaginal delivery had better general health (36). Because women with cesarean section delivery need rest at home after delivery and movement is restricted and their recovery is delayed, it can affect the mental health of the individual and also the general health of the mother due to the pain and fatigue and this limits the relationship between mother and baby and reduces the quality of life in these women. Based on the results of the meta-analysis, the mean scores of dimensions of physical pain, vitality and joy were higher in women with cesarean delivery than in women with vaginal delivery, and the mean scores increased by enhancing the elapsed time postpartum. In the study of Turkan et al. in Isfahan, the mean scores of physical pain dimension, vitality and joy were higher in women with cesarean delivery than women with vaginal delivery. Also, Bahrami et al. indicated that there was no significant difference in the mean score of physical pain aspect within 6 to 8 weeks postpartum and 12 to 14 weeks postpartum and the mean score decreased in the dimensions of vitality and joy, which was consistent with our results (20, 27). The greatest difference in the mean scores of the QOL dimensions based on delivery method, were observed in the dimension of limitation to do a role due to emotional problems so that the mean score of this dimension was 31.9 higher in women with vaginal delivery than in women with cesarean delivery. However, no change was observed in this dimension's mean score regarding increasing the elapsed time postpartum. In the study of Majzoubi et al., the most significant difference was observed in the aspect of limitation to do a role due to emotional problems and no significant change was observed in the mean scores by increasing the elapsed time postpartum (23).

## 5. Limitations

Study limitations include: 1- Failure of the internal databases to search for word combinations 2- Low quality of some studies that led to their exclusion from studying 3- Failure to classify the same areas of quality of life in studies 4- Failure to use a standard and uniform questionnaire in studies. 5- Failure to review and report the same quality of life areas in the studies researched. 6- The publication of similar articles globally in other languages and their failure to enter the study.

## 6. Conclusions

The results of the present meta-analysis showed that the mean scores for most dimensions of quality of life were higher in women with vaginal delivery than in women with cesarean delivery, and women with vaginal delivery are more satisfied in all of these dimensions than women with cesarean delivery. Therefore, it is recommended that health authorities carry out intervention and training programs in order to encourage pregnant women to undergo vaginal delivery.

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## Conflict of Interest:

There is no conflict of interest to be declared.

## Authors' contributions:

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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