

Original Article

Psychoprophylaxis Effects on Labor Outcomes

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Abstract

Introduction: Psychoprophylaxis is a method referring to the preparation of pregnant women for labor with breathing techniques/relaxation and information on anatomy and physiology. It is believed that psychoprophylaxis exerts beneficial effect on labor outcomes.

Purpose: This narrative review explores the effect of psychoprophylaxis on labor outcomes.

Methods: A literature review was conducted using the international databases Medline/PubMed, Scopus and Google Scholar. Only quantitative studies published in English language journals were included.

Results: Despite conflicting data and study limitations there is evidence that psychoprophylaxis is associated with lower rate of cesarean sections, lower pain intensity and analgesia, shorter dilation period and lower cortisol levels in biological fluids.

Conclusions: Psychoprophylaxis has been associated with favorable labor outcomes. Future, well designed studies could contribute to the understanding of the underlying physiological mechanism and to the further strengthening of the method.

Key words: Psychoprophylaxis, Lamaze method, labor, cesarean section, pain, outcomes

Introduction

The term psychoprophylaxis comes from the Greek word "psyche" and the word "prophylaxis". It includes knowledge and practices for achieving a fear-free and pain-free childbirth. With this method, the pregnant woman is trained to apply her knowledge at the given moment of childbirth, in order to protect her body from pain and her soul from possible injuries.

Psychoprophylaxis is considered a method of psychosomatic preparation, because it concerns the proper preparation of the woman by taking care of both her physical and emotional components.

Due to the painful nature of childbirth and maternal and neonatal complications, women need support during this phase of their lives. The development of knowledge and skills during pregnancy prepares expectant mothers

for childbirth and leads to health promotion. There is evidence that participation in prenatal education classes had a very significant impact on the psychological well-being of pregnant women (Jakubiec et al., 2014), as well as on enhancing their self-confidence, reducing anxiety and fear of pregnancy and childbirth (Wideman & Singer, 1984).

According to the results of Firouzbakht et al. (2013), parents with a high level of education were more interested in participating in prenatal classes. The level of anxiety in women who received education was lower than women who did not, as was the intensity of pain during labor. According to the findings of this study, prenatal education and psychological support are beneficial for mothers during pregnancy and childbirth and education is recommended for all pregnant women.

Background: Two basic forms of psychological interventions have been developed over the last seven decades the Lamaze or psychoprophylactic method and the Dick-Read method. The Dick-Read method (Dick-Read, 1953), which originated in England, primarily employs education and a positive philosophy to alleviate pain. Lamaze method was inspired by Pavlov principles. With this method, a series of breathing techniques served as the conditioned response to the stimuli of both verbal commands and uterine contractions.

The method was first applied in the former Soviet Union and ended up as the official method of childbirth in the Soviet Union in 1951 (Tanzer, 1968). Lamaze, a French obstetrician modified the Russian methodology and resulted in a psychoprophylactic method called "accouchement sans douleur" or "childbirth without pain" (Lamaze, 1952; Lamaze, 1954).

Nowadays, the term "psychoprophylaxis" (Lamaze method) in Obstetrics refers to a certain method placing emphasis on breathing techniques and relaxation along with information on anatomy and physiology. This method refers to six to eight classes held for pregnant women during the last trimester of pregnancy. These classes include information about the anatomy and

physiology of gestation and parturition and focus on respiration techniques and controlled neuromuscular relaxation.

Psychoprophylaxis is thought to influence the experience of pain during labor in three ways: physiologically, by improving oxygenation and reducing muscle tension; cognitively, by focusing on breathing and relaxation rather than pain; and psychologically, by reducing fear and improving the sense of personal control. Deep breathing has been suggested for the first stage of labor, with faster breathing during the stronger contractions of the second stage and breath holding and panting during the relaxation stage (Lowe, 2002).

Despite evidence for positive results on childbirth experience the effect of the psychoprophylaxis on labor outcomes remains controversial due to various methodological approaches. Lamaze method is often combined with various nursing interventions and other psychological methods. Despite the promising results, (Wu et al., 2023) the net contribution of Lamaze method itself to labor outcomes is still under research. The aim of the present study was a narrative review of the existing literature on the association between psychoprophylaxis and labor outcomes. A descriptive review of the international literature was carried out with the mentioned in the abstract key words and phrases.

Results

Results could be summarized according to four axons/outcomes: a) cesarean section rate, b) amount of analgesia during labor/pain intensity c) dilation period and d) cortisol levels in biological fluids, along with some other interesting findings regarding maternal and infant morbidity. Table 1 summarizes the findings of the present bibliographic review.

a) Cesarean section rate:

In the study of Hughley et al., (1978) 500 consecutive Lamaze prepared women were compared to 500 controls, matched for age, race, parity and educational level. Psychoprophylaxis group had significantly fewer cesarean sections, less fetal distress and less maternal morbidity.

In a RCT study, DongYing et al. (2012) tested the hypothesis that preoperative psychological visiting by trained expert theater nurses using specially designed psycho-leaflets could reduce prior Cesarean stress and anxiolytic levels, and improve maternal and infant outcomes. In that contest, 146 parturients with American Society of Anesthesiologists (ASA) physical status class I or II were randomly allocated to a "psychological visiting" or "non-psychological visiting" group. Although not clearly stated the intervention focused amid other parameters on breathing and relaxation training and mental control, thus resembling psychoprophylaxis. Overall satisfaction with Cesarean experience, total morphine consumption, urinary indwelling catheter >24h and 72 successful breastfeeding after cesarean section all differed significantly in favor of the intervention group. Regarding anxiety, it was significantly reduced prior, intra- and post- operation.

Shand et al., (2022) conducted a cross-sectional antenatal survey of 505 nulliparous women ≥ 28 weeks gestation with a singleton pregnancy. Intervention referred to a broad spectrum of psychoeducations and four groups were created: psychoprophylaxis birth and parenting, other, or none. The psychoprophylaxis group ended up in significantly higher vaginal birth rate compared with the other groups, a difference further attenuated after adjusting for maternal characteristics, birth and hospital factors.

The study of Scott & Rose., (1976) included 129 primiparas attending psychoprophylaxis sessions and equal number of controls. Women in the psychoprophylaxis group were given narcotics less frequently, while they had a significantly higher frequency of spontaneous vaginal delivery.

The following two studies by the same authors are indicative of the limitations of the studies and the necessary caution when interpreting the results:

a) In the study of Bergstrom et al., (2009), a total of 1087 nulliparous women and 1064 of their partner were studied after classified into two groups of natural birth preparation : a psychoprophylaxis group and a standard care one. No difference in emergency cesarean

sections, in labor analgesia or experience of birth was observed.

b) However, in later study of the same groups by the same authors, when participants were adjusted for maternal antenatal fear of childbirth, smoking in early pregnancy and demographic characteristics, the researchers found that women who used psychoprophylaxis during labor had a lower risk of emergency cesarean section compared with those who did not use the method.

The study of Ntella (2017), was a cross-sectional study that comprised a representative sample of 200 mothers equally allocated to two groups (psychoprophylaxis and standard care) who gave birth in two public and three private hospitals. Most women in psychoprophylaxis group (60%) gave birth naturally, while most women (52%) in standard care group underwent caesarian section ($p=0.01$).

b) Dilation period

In another cross-sectional study including 165 pregnant women who attended a psychoprophylaxis program (Fernandez et al.2024), a significantly shorter duration of dilation (up to 6 hours) time was observed in the 4-6 session group, compared with the group of up to 3 psychoprophylaxis session.

The retrospective study of Morales et al. (2020) comprised 80 nulliparous and multiparous pregnant women who attended psychoprophylaxis sessions. When the women who completed all psychoprophylaxis sessions were compared with those who did not, their neonates had a better Apgar at the first minute of life and less use of medications in the period of dilation and expulsion and a shorter duration of dilation and expulsion period (dilation completed in up to six hours and expulsion in less than 25 minutes).

c) Analgesia

Charles et al. (1978) in their retrospective study found no other obstetric difference between psychoprophylaxis and standard care group, but lower analgesia during labor.

The aforementioned studies Scott & Rose (1976) and DongYing et al. (2012) did show lower pain intensity and lower narcotics consumption. Less use of medications in the

period of dilation without any further details is referred by Morales et al (2020).

d) Cortisol levels

In their cross-sectional study, Cardenás-Pineda et al. (2020) recorded the serum cortisol level of 16 pregnant women who made use of the Obstetric Psychoprophylaxis

(OPP) service. They found that the number of OPP sessions influences the level of cortisol, so more assisted sessions mean less cortisol and mental state component of psychoprophylaxis was assumed. DongYing et al., (2012) also found lower salivary cortisol in the psychoprophylaxis group

Table 1. Summary of the main review findings

First Author, Year of publication, Country	Type of Research	Participants	Main conclusions
Scott & Rose., 1976, USA	Nonrandomized clinical trial	129 primiparas- psychoprophylaxis group/ 129 controls	<ul style="list-style-type: none"> • Less narcotics/conducti on anesthesia • ↑Spontaneous vaginal deliveries
Hughley et al. (1978), USA	Nonrandomized clinical trial	500 psychoprophylaxis group, 500 standard care	Lower: cesarean section rates, prematurity, postpartum infections, toxemia
Charles et al.(1978)	Retrospective	95 women in psychoprophylaxis group, 154 in standard care	<ul style="list-style-type: none"> • Lower analgesia/ pain, no other obstetric difference
Bergström et al., (2009), Sweden	Randomized control trial	857 nulliparous women with a planned vaginal delivery.(two groups:486 psychoprophylaxis, 371 standard care)	<ul style="list-style-type: none"> • “Natural childbirth preparation including training in “breathing and relaxation <i>did not</i> decrease the use of epidural analgesia during labour, nor did it improve the birth experience or affect parental stress in early parenthood in nulliparouswomen and men, compared with a standard form of antenatal education”.

Bergström et al., (2010), Sweden	Randomized control trial	See previous ref.: adjusted for socio-economic variables	<ul style="list-style-type: none"> • reduced rate of emergency cesarean section
DongYing et al.(2012), China	RCT	146 parturients undergoing cesarean section (two groups: 57 non psychological visiting, 62 psychological visiting)*	<ul style="list-style-type: none"> • Lower anxiety level, lower pain intensity, lower analgesia, early onset of lactation, lower salivary cortisol
Morales et al. (2020), Ecuador	Retrospective	80 nulliparous and multiparous pregnant women attending psychoprophylaxis sessions (two groups: six sessions completed/ less than six sessions	<ul style="list-style-type: none"> • shorter dilation period • less use of medications in the period of dilation and expulsion • a better Apgar at the first minute of life
Cardenás-Pineda et al.(2020), Peru	Cross-sectional	16 pregnant women	<ul style="list-style-type: none"> • The number of OPP sessions correlated reversely with the level of serum cortisol
Shand et al., 2022	Cross - sectional	Four groups: psychoprophylaxis, parenting, other none	<ul style="list-style-type: none"> • ↑ vaginal deliveries
Fernandez et al.(2024), Peru	Non-experimental cross-sectional study	165 medical records of pregnant women (two groups: 73 women up to 3 sessions, 92 women 4-6 sessions)	<ul style="list-style-type: none"> • Shorter duration of dilation (up to 6 hours) time in the 4-6 session group

Discussion

The results of the present review support the positive effect of psychoprophylaxis on labor outcome. Although there is a wide range of findings [from the enthusiastic report of Hughley et al., (1978) who found a beneficial effect to most labor parameters to the rather disappointing results of Charles et al., (1978) in the who found no other obstetric difference between psychoprophylaxis and standard care group,

but lower analgesia during labor and those of Bergström et al., (2009)], most researchers agree that psychoprophylaxis does contribute to a lower rate of cesarean section and lower analgesia, especially when data are adjusted for sociodemographic factors. However, sound physiological evidence is still lacking. The evidence so far suggests an underlying role of neuroendocrine system and stress alleviation, in the context of behaviorism. Indeed, psychoprophylaxis holds that the pain due to uterine contraction has been

overemphasized over countless generations through social and environmental conditioning: stereotypes lead women to expect pain with labor, a belief further exaggerating the actual pain due to uterine contractions (Furler et al., 1964)

The neo-Pavlovian school suggest that it is possible to modify the perception of pain by diverting the conditioned "uterine contraction-pain reflex" to another, such as "uterine contraction-breathing rhythm". In that context, relaxation, may serve as a distraction from introspective attention to the effects of uterine contraction. Moreover, the support women provide to each other during the sessions, the exchange of ideas, and detailed information and practice about the mind/body interaction during the stages of labor are components of the intervention that may contribute to the understanding of pregnancy and the birth process reducing stress levels. Of note, two studies have demonstrated reduced cortisol levels in saliva and serum, a finding indicating the stress reduction as a possible underlying cause of the beneficial effect of psychoprophylaxis.

Beyond psychological conditioning, the manipulation of such physiological processes as respiration and neuromuscular responding may affect endogenous analgesics. Animal studies (Gintzler, 1980) provide evidence that these compounds play a role in coping with parturition, and the secretion of endogenous opiates and the appearance of their receptors may be enhanced by psychoprophylactic preparation, with its repeated rehearsal of labor and delivery. There is also evidence that these hormones levels act as predictors of pregnancy anxiety (Senudin et al., 2019).

However, a common methodological issue in the studies included in this review was the sample selection. Randomization and adjustment for socioeconomic variables is often difficult to achieve, as women are very positive about their participation in the preliminary sessions, when they are informed about them. An ethical issue could arise from the women themselves, namely in the case of randomization, that they would be deprived of an intervention that is considered essential for the outcome of the pregnancy. DongYing

et al., (2012) comment on the popularity of the method in terms of bias: "(...) it was still possible that they were aware of the group assignment because of the increasing popularity of preoperative education on natural birthing or/and Cesarean delivery and gravidas' avid involvement into antenatal educating classes. Additionally, most women participating in the psychoprophylaxis sessions tend to well-educated and of high income, a fact further confounding the results.

In conclusion, there is encouraging evidence for the beneficial effect of psychoprophylaxis on labor outcomes. Future, well designed studies could contribute to the understanding of the underlying physiological mechanism and the further strengthening of the method.

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