

## Labor According to P.N.E.I: The Woman's Emotions

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### Abstract

**Background:** The extreme medicalisation takes health professionals in charge to administer invasive and useless action, which cause a disturbed environment or even to assume wrong behaviours during labor, which provoke a slow down or an arrest of it. The interest is to detect how, extrinsic factors may influence the women, experiencing a labor, both clinically and emotionally.

**Methods:** A multicentric observational study with random sample done on 515 women, who delivered in hospital/home during 2016-17, who received a questionnaire after delivery.

**Findings:** Data analysis shows labor started spontaneously (51.7%), while it has been induced (48.3%). A different perception of contractions, followed by different medical actions: amniorexi (2.9%), Augmentation (19.4%), advice to eat/drink (12.6%), shower (12%). Regarding vaginal examination, during labor, 45.6% of the women had 1-3 ones. Furthermore, the study has shown they felt freedom of movements (89%) and, assisted "one to one" does influence relevantly their own feeling (40.2%). In regards to emotional sensations, positive emotions as trust (n = 315), comfort (n = 256) and affection (n = 228), are mostly represented, probably due to a regular labor. Infact, a positive opinion has been expressed in 44.8%

**Conclusion:** Some helpful practices can influence the labor. This underlines the need to go back to a physiology of the women needs according to a neuroendocrine perspective. It is necessary to encourage the change, reducing the excess of medicalisation through individual obstetric treatment and adopting a "woman centred" model.

**Keywords:** *Psycho-Neuro-Endocrine-Immunology; Labor; Environment; Midwife; Emotions*

### Abbreviations

P.N.E.I: Psycho-Neuro-Endocrine-Immunology; VIP: voluntary Interruption of Pregnancy; CS: Cesarean Section; SD: Standard Deviation; NICE: National Institute for Health and Clinical Excellence; GDPR: General Data Protection Regulation

### Introduction

Psycho-neuro-endocrine-immunology [1], outlines a model of research and interpretation of health and disease, where the human body is seen as a structured and interconnected unit, where psychic and biological systems influence each other [1,2].

This provides the basis for advancing new integrated approaches to prevention and disease and, at the same time, sets the possibility of going beyond the philosophical contrast between mind and body [1,2].

The brain has got different pathways to communicate with the rest of the body, mostly represented by the so called neuroendocrine axis, through which it influences the activities of the body itself, particularly the immune system [1,2]. Research has demonstrated that all the peripheral nervous net create a strong dialogue with the immune cells, consisting of two arms: a chemical one and a nervous one, particularly in the organization of the immunologic response to stress [3]. Since the extensive network of sensory nerve fibers release neuropeptides and neurotransmitters in the place where the immune and inflammatory response takes place [1-3]. During pregnancy and labor, hormones act as chemical messengers which calibrate several functions of the organism, interacting and balancing each other [3,4]. The hormonal system that calibrate the stress is complicated and his balance is ephemeral [3-5]. The passage from eu-stress to distress is fast and bi-directional. During the labor, secretion of hormones, typical of stress, happens with peaks depending on acute stimuli (example uterine contractions), but, due to peculiar conditions, their production may become continuous and cause distress [5].

In women, the characteristic hormones of the stress response are catecholamines, cortisol and vasopressin, which are added to the hormones that activate the parasympathetic such as oxytocin and prolactin [5].

During physiological labor [5], the pain associated with uterine activity causes acute and rhythmic stress that induces the production of catecholamines, which in turn cause an oxytocic response and stimulate the secretion of endorphins [5]; the woman will be in a state of eustress in which there will be an increasing capacity for tolerance to pain [1-5]. In theory, it is likely to assume that there are two different types of mechanisms that are able to bring stress back to an acceptable level [1]: the excitation of the parasympathetic visceral ganglia [1]; the descent of the presented part [5-9], thanks to the maternal movement, both the cervix and the Ferguson ganglia will be stretched and stimulated [1], activating the parasympathetic response; a female stress response system because the attack and flight hormones are produced not only due to stress, but also oxytocin and prolactin, which thanks to their presence will keep the parasympathetic active by attenuating the sympathetic system before it can take over [1-5].

When labor is disturbed, there is a risk of causing a "dystocia" [1-6], that is the inhibition of the production of oxytocin which involves: a slowing down of labor, less frequent contractions and slow dilation of the cervix, lengthening of the expulsive period, increased risk of postpartum hemorrhages and breastfeeding problems [6-9].

The results of a correct activation of the parasympathetic system during labor are various [1]: the sympathetic nervous system, if activated in the right measure, follows the achievement of birth; in the case in which it is hyper-activated it determines a condition of distress [1], therefore the balanced collaboration between the two vegetative systems is able to determine the birth process [6-9]; the sympathetic system supports labor, maintains the tone of the uterine bowels and the vessels of the placenta; the parasympathetic system gives rhythm to visceral contractions, releases the neck and sphincters [1-9].

From analysis of the literature [6-9], we can argue that external environment may influence the labor; in fact, in cases during which it is experienced in a disturbed [7], environment, it results in inadequate behaviours [6,7], which provoke a slow down [7], or arrest of the labor itself. All this may cause the execution of invasive procedures and often not useful, with a consequent excess of medicalisation of the event childbirth [6-8].

This becomes a starting point to investigate the phenomenon in order to understand how much the extrinsic factors really influence woman in labor.

### Objectives of the Study

Aim of the study is to understand how external factors may influence the feelings of a woman in labor/delivery, both clinically and emotionally.

## Materials and Methods

A multicentric, observational investigation with random samples has been done.

The sample is represented by 515 women who have just given birth in the University Clinic of Bari, Clerical Hospital "Miulli" Acquaviv-adelleFonti, "Di Venere" Hospital Bari, and others recruited, due to cooperation of "Latte+Amore = Mamma Mia" Association. The sample was recruited during the hospitalization, at discharge and online in the period between March 2017 and February 2018.

An informed consent has been obtained by the women, recruited in these hospitals, after the study was authorized by the General Manager and Health Manager of these Hospitals plus The Chairman of "Mamma Mia" Association.

All the women who adhered to the protocol have been told about the aim of the study and been warned to be free to drop out at any time.

The study respects the principles of the Helsinki Convention.

### Inclusion criteria

1. Women available to participate, after informed consent
2. Women who had a labor and spontaneous delivery, with no difference between nulliparous and multiparous woman, in hospitals
3. Women who had labor and spontaneous delivery at home
4. Italian and foreign women with perfect knowledge of Italian Language.

### Exclusion criteria

1. Women not suitable for the study
2. Cesarean section women
3. Drop out
4. Poor knowledge of Italian Language

Data have been collected through the administration, to all participant, of a specific questionnaire, useful in evaluating the maternal past during the childbirth pathway, related to structural emotional and link and the level of influence that these last may have had on the experience labor/delivery.

The knowledge of the investigation tools has been made possible through the direct administration of questionnaire to the women admitted to hospital and online to women who delivered at home, through the "Latte+Amore = Mamma Mia" Association, flowing all data into a single database leading to "Google drive" platform where there were elaborated.

### Instruments

The Questionnaire, developed on the base of the analysis of the medical literature [4,9-18], is made of 33 multiple choice items, divided in to three parts. The first one consists of the woman's medical history. In the second one, labor is investigated, the modality, if spontaneous or drug induced, with a preceding, contemporary or followed by amniorexi.

Perception of contractions, timing of dilatation and management of cardiotocographic monitoring are still in the second part. Finally, the third part comprehends to the emotional aspect of the labor-delivery.

**Findings**

After a short socio demographic description of the sample, the analysis of the result has been divided in two sections. Our sample (Table 1) is composed by 515 who have just given a childbirth, with great prevalence of Italian women (97.3%), compared to foreign women (2.7%). Average age is 32.7 ± 5.03 (15 - 48\*) 55.1% of the recruited women, have already had a pregnancy, 68.7% of this having had a spontaneous delivery, 3.9% an operative delivery, 3.5% had VIP (voluntary interruption of pregnancy), 17.6% spontaneous abortion, 4.2% CS (Cesarean section) and at last, 2.1% didn't answer.

	<b>N (absolute frequency)</b>	<b>% (percentage frequency)</b>	<b>Media (SD)* - (range)</b>
Age	-	-	32.7 ± 5.03 (15 - 48)
<b>Nationality</b>			
Italian	501	97.3%	
Foreign	14	2.7%	
<b>Previous pregnancies</b>			
Yes	284	55.1%	
No	231	44.9%	
<b>If so</b>			
Vaginal birth	354	68.7%	
Operative delivery	20	3.9%	
VIP	18	3.5%	
Miscarriage	90	17.6%	
Cesareansection	22	4.2%	
No reply	11	2.1%	

**Table 1:** Socio-demographic characteristics of the sample.  
\*SD: Standard Deviation

First part deals with labor management (Table 2). From data analysis it results that more than half of the sample (84.5%) has completed both labor (spontaneous in 51.7%) and delivery in an hospital; the other way round, a scant percentage (10.5%) chose for home labor/delivery. Regarding evolution of the labor, the modality of the amnio-chorial membranes rupture has been analyzed, which happened before the labor in 31.1% of the women, after the labor starting in 45.8% and with amniorexi in 23.1%.

<b>Management of labor time</b>	<b>N (absolute frequency)</b>	<b>n % (percentage frequency)</b>
<b>Place of labor/delivery</b>		
Labor/Delivery Hospital	435	84.5%
Labor at home/Delivery Hospital	20	3.9%
Labor/Delivery at home	54	10.5%
Labor at home/Delivery in a maternity home	1	0.2%

No reply	5	0.9%
<b>Labor was</b>		
Spontaneously	266	51.7%
Induced	246	48.3%
<b>When did the membranes break?</b>		
Before the onset of labor	160	31.1%
After the onset of labor	236	45.8%
Amniorexi	119	23.1%
<b>Perception of contractions</b>		
Regular (3 - 5')	384	74.5%
Irregular	131	25.4%
<b>Duration regular contractions</b>		
0 - 10 hours	405	78.6%
10 - 20 hours	39	7.6%
≥ 20 hours	16	3.1%
No reply	1	0.1%
I do not know	51	9.9%
Always	3	0.6%
<b>How long did it take to reach the 3 - 4 cm dilation?</b>		
< 8 hours	321	62.3%
Between 8 and 12 hours	86	16.7%
> 12 hours	53	10.3%
I do notknow	55	10.7%
<b>How long did it take to reach full dilation?</b>		
> 8 hours	169	32.8%
< 8 hours	291	56.5%
I do notknow	55	10.7%
<b>Was there a slowdown in contractions?</b>		
Yes	278	54%
No	237	46%
<b>If so, what has been done?</b>		
Oxytocin	100	19.4%
Amniorexi	15	2.9%
Shower	62	12%
Eaten /drunk	65	12.6%
No reply	273	53.1%
<b>Time of duration of labor/subjective delivery</b>		
Too short	151	29.3%
Too long, butright	224	43.5%
Too long and exhausting	140	27%

<b>Monitoring execution</b>		
Upon admission	60	11.6%
Yes, for all the labor time	202	39.2%
Yes, several times during labor	180	35%
Never	73	14.2%
<b>Request for analgesia</b>		
Yes	185	35.9%
No	330	64.1%
<b>If so, how many cm.</b>		
0 - 4 cm.	88	47.5%
5 - 7 cm.	79	42.7%
> 7 cm.	13	7.1%
No reply	5	2.7%
<b>Gynecological visits</b>		
No visits	27	5.2%
1 - 3	235	45.6%
3 - 5	129	25.2%
> 5	97	18.8%
> 10	27	5.2%
<b>Episiotomy information</b>		
Yes	123	24%
No	392	76%
<b>Duration of labor</b>		
I stayed in my hospital room	78	15.1%
I stayed in the delivery room	354	68.8%
I stayed at home	83	16.1%
<b>Did you eat/drink during labor?</b>		
Yes	257	49.9%
No	258	50.1%
<b>Was it able to move during labor?</b>		
Yes	458	89%
No	57	11%
<b>Were there any maneuvers, drugs and/or other administered during labor?</b>		
Yes	223	43.3%
No	292	56.7%

**Table 2:** Management of labor time.

Legend: N: Absolute Frequency; n<sub>%</sub>: Percentage Frequency.

Next step is represented by analyzing one of the most important aspects of the labor, that's to say uterine contractility. In most part of the sample (74.5%), perception of contractions has been regular, with intervals of 3 - 5 minutes; in this particular case, a length of time oscillating between 0 - 10 hours (78.6%) and 10 - 20 hours (7.6%), while the remaining 25.4% has referred an irregular perception of them.

Furthermore, the length of the time needed to reach the active phase of the labor has been measured, which has resulted less than 8 hours in 62.3% and 8 - 12 hours in 16.7%.

On the other hand, the time needed, to reach a complete dilatation, is less than 8 hours in 56.5% of the sample, more than 8 hours in 32.8% and in 10.7% there is no answer. With regards to the timing of contractions, in 54% a slowdown has been revealed, which has required oxytocin administration in 19.4%, amniorexi in 2.9%, advice a shower in 12%, while 12,6% has been advised to eat and/or drink. Finally, 53.1% gave no feedback.

Attention has been paid, during the investigation, to individual perception of the sample, regarding the length of the labor-delivery, resulting too short in 29.3% of the sample, adequately long in 43.5%, while long and tiring in 27%.

Referring to cardiotocographic monitoring, data show that 39.2% of the sample had it twice during the labor, 11.6% only at the time of admission, 35% had it several times during labor and only 14.2% stated they never had it.

Another aspect investigated, the request of partoanalgesia 64.1% did not request it, while 35.1% had it on their request.

Considering this last percentage, the timing of execution of this procedure has been analyzed: it happened in the prodromic phase [12], dilatation 0 - 4 cm in 47.5%, in 42.7% in the active phase, dilatation 5 - 7 cm, in 7.1% from 7 cm dilatation 2.7% of the women have not been able to indicate the phase during which it happened.

Women were asked how many gynecologic examinations they underwent: 45.6% had from 1 to 3, 25.2% from 3 to 5 and 5.2% had more than 10 examinations, 5.2% didn't answer.

Another point which required attention was episiotomy: 76% stated they didn't have one while 24% received it.

The site where the labor took place was investigated too, resulting in 68.8% in the delivery room, 15.1% on the ward, in her bay and 16.1% only, at home, 50.1% didn't have meals or drink during delivery, while 89% were free to choose.

The question if they had medications or any procedures during the labor was answered by 56.7% with no reply.

In the second section the emotional aspect of the labor has been investigated (Table 3). Regarding the emotional aspect, interfering with the slowdown of contractions, women referred to being scared in 13.8%, relaxed in 41.7% and 44.5% didn't answer the question.

Emotion	N (absolute frequency)	n% (percentage frequency)
<b>Was there a slowdown in contractions?</b>		
Yes	278	54%
No	237	46%
<b>What did you feel?</b>		
I got scared	71	13.8%
I rested	215	41.7%
No reply	229	44.5%
<b>Episiotomy information</b>		
Yes	123	23.9%
No	392	76.1%
<b>If so, how much did this upset the mood?</b>		
Anything	37	30.9%
No much	43	35%

So much	27	21%
Verymuch	16	13.1%
<b>Presence of family members during labor/delivery</b>		
Yes	344	66.8%
No	171	33.2%
<b>If so, how much did this affect during labor/delivery?</b>		
Anything	37	7.2%
No much	52	10.1%
So much	129	25%
Very much	274	53.2%
No reply	23	4.3%
<b>Was she assisted by a single midwife during labor?</b>		
Yes	320	62.1%
No	195	37.9%
<b>How much has this affected your mood?</b>		
Anything	18	3.6%
No much	31	6.1%
So much	107	20.8%
Verymuch	207	40.2%
No reply	151	29.3%
<b>What attitude did the midwife take towards you?</b>		
Empathetic	224	43.3%
Of trust	239	46.4%
Hostile/Aloof	52	10.1%
<b>Did you feel discomfort in being observed by the staff?</b>		
Yes	68	13.2%
No	447	86.8%
<b>What were the lights in the delivery room like?</b>		
Bright and blinding	122	23.7%
Soft and relaxing	393	76.3%
<b>General judgment labor/delivery assistance</b>		
Anything	31	6%
No much	55	10.7%
So much	198	38.5%
Verymuch	231	44.8%

**Table 3:** Emotional aspects in labor-delivery.

Legend: N: Absolute Frequency; n<sub>%</sub>: Percentage Frequency.

Again information about episiotomy caused no fear in 30.9%, mild fear in 35.5%, moderately scared in 21% and severely scared in 13.1%.

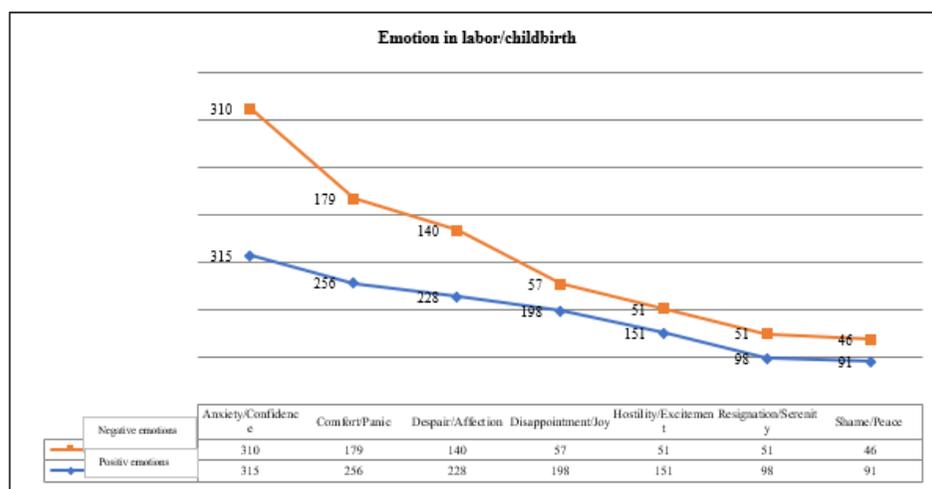
The question if an assisting relative had any effect on emotional condition during labor/delivery, was answered by the 66.8% who had this chance with a 53.2% positive feeling, negligible in 10.1%, indifferent in 7.2% and 4.3% didn't answer.

Regarding the number of midwives assisting, during labor, a reasonable percentage, 62.1%, stated having been assisted by a single midwife, 40% of these considered the single one having a positive influence on the labor, 20.8% enough, poor influence was only for the 6.1%, 3.6% nothing and 29.3% were unable to judge. Lately, the perception of the midwife's attitude toward the woman was analyzed 46.4% stated they trusted the midwife, 43.3% revealed having become empathic, and finally a perception of hostility and detachment, coming from the midwife, in 10.1%.

Other questions were related to embarrassment felt, while observed during the labor and only 13.2% gave an affirmative answer. About lights during labor-delivery: 76.3% said were suffuse and relaxing, while 23.7% said they were dazzling. At the end, an opinion has been asked about a total assistance received during labor-delivery: 44.8% declared an excellent assistance and only 6% were for a bad experience.

The emotional past during labor-delivery referred by the women interviewed, showed the presence of opposing negative and positive emotions. In order to analyze the data, the absolute frequency of the emotions measured has been calculated. The mode has shown that the most frequent emotions seen are anxiety (n = 310), regarding negative emotions and trust (n = 315) regarding positive emotions.

In order to compare the different emotions, we created a distribution of frequency for both the categories.



Graph 1: Frequency distributions of emotions in labor/delivery.

### Discussion

Aim of the study was to understand how external environment may influence the past of the woman during labor-delivery both clinically and emotionally.

Regarding the site where the labor-delivery took place, data have shown that, except for the women that decided to deliver at home (10.5%), the most part of them had labor-delivery in hospital (84.5%).

The low number of women that decide to have their labor-delivery at home, testifies the lack of regional and national laws [19].

In Italy, due to the absence of national laws, in this sector, which would allow women to choose freely the site of the event and the assisting professionals to work relaxed, without fear of being issued [19], in some regions, the Governors have activated pathways for home delivery, for physiologic pregnancies, which are assisted by health professionals and reimbursed [19].

This fragmentation of the right, to be assisted by the health professionals, for a safe delivery in the place you choose, is cause of territorial discrepancy of access to the treatment [19]. Analyzing the data it has become clear that the start of the labor has happened spontaneously in 51.7% of the cases, while in 48.3% it has been induced, with a perception, by the women interviewed, of regular contractions in 74.5%, with an average time from 0 to 10 hours.

Furthermore, the time relapsed to reach a dilatation of 3 - 4 cm (63.3%) has been, in average, less than 8 hours, as the time taken to a complete dilatation (56.5%), has been less than 8 hours. These data fully correspond to those reported in the NICE (National Institute for Health and Clinical Excellence) Guidelines Intrapartum Care 2014.

This study has shown a slowdown of the contractile activity (54%) which has induced a different management of the situation. Administration of oxytocin has been the most common treatment in 19.4% of cases, that, according to the medical literature, should follow other assisting procedures. Infact, it is well known that endogen oxytocin may be stimulated and started from estrogen secretion, which happens when the woman is welcome, allowing her to relax, creating a private environment, that relaxes her, adopting the massage technique, digito-pressure [20] and enabling free movement [21,22].

Other procedure, amniorexi, resulted applied in 2.9% of cases. This value is in accordance with the different guidelines [12], which advice for its use, in case of slowdown/arrest of the dilatation, when the first line obstetric interventions have failed, in case of fetal heart beat altered, which may suggest to verify the amniotic fluid.

Other procedure utilized consisted in suggesting eating or drinking in 12.6% of cases, based on for the efficacy of hydration on uterus contractility as well known in medical literature [23]. Furthermore, a shower has been advised in 12% of women, because of its muscular relaxing effect [24-26].

A relevant data has come from the high "no response rate", 53.1%, which may make one think of a management of the labor based on poor information of the woman done by the professional, regarding the procedures used. In this case the professional is considered the key-role for the care of the mother and child [19].

Regarding the perception of the length of the labor by the woman, 29.3% thought it to be too short, 43.5% long, but satisfying in its duration, only 27% considered it too long and exhausting. Cardiotocography might be blamed in this perception, having been performed continuously during the labor in 39.2% of the sample and several times, discontinuously, in 35%.

Considering the guidelines of the leading scientific societies, which give clear recommendations [10,14-17], regarding labor monitoring, data indicate an altered management of the monitoring itself [15-17], influenced by different factors, as lack of Cardiotocography where it was necessary or lack of procedures [15-17], well defined within the same hospitals [15-17].

Another factor might be "the false feeling" of the professionals to be more protected by a legal point of view [17,28].

One can gather that this situation not only limits the freedom of movements of the woman, but it alters the natural dynamic of the labor [12,13]. Infact 68.8% stated they had a labor in delivery room, with possibility of the movements "conditioned" to the situation in 89%

of cases, well knowing that movement decrease the pain and postural changes and verticality promote both dilatation and the descend of the fetus. This investigation has shown that only 35.9% asked for partoanalgesia, during labor, at the right time [12,13]. So was for gynecologic examination during labor in 45.6%, according to recommendations [12], because those procedures may be experienced by the woman as embarrassing, tedious or even invasive.

In the second session, this study focalizes the emotional aspect of the laboring women. Other strongly relevant data was the information given to the woman, regarding a possible episiotomy, which happened in only 23.9% of cases and provoking just a mild discomfort in only 35% of them.

One can suppose that this data might have been incomplete, being unable to reflect the real situation, because the remaining 76.1% had no information and consequently, not in the capacity to express the real feeling at that time. This lack of communication of the operators doesn't respect the right of the woman to make an informed choice.

Another factor influencing the perception of the evolution of the labor [9-18,23], is represented by the chance to have a family member assisting during the labor [9-18,23].

Infact, 66.8% benefitted from this possibility, deeply and positively affecting the labor itself.

A similar percentage has been obtained when the attitude of a woman, affording the labor assisted by a single midwife, has been investigated (62.1%). This has influenced a lot (40.1%), because the midwife influenced positively the woman (46.4%), creating empathy in 43.1% of the cases. This last acknowledgement supports what has already been written in different papers [13-30], regarding the importance of one to one assistance, starting at the time when a woman is assisted by a midwife.

This attitude, which offers a high degree of continuity of the assistance [29,30], through which the midwife meets the woman, plans with her the assistance to her pregnancy and delivery, assuming a central role and a position of responsibility compared to the mother, also allows the midwives involved to express a great satisfaction, relatively to the work, which increases their responsibility, professionalism and the opportunity to develop deep relationships with the women assisted by them.

Regarding the privacy at the time of the labor, women interviewed didn't declare any inconvenience (86.8%) being observed by the personnel at work at that time and underlined their suitability to create a relaxing environment [23], using suffused lights (76.3%) obtaining that level of intimacy, favorable to the evolution of the labor. This is known to increase endorphins production, useful to the health of the woman laboring [1-6].

Finally, the emotional past of the women interviewed, revealing both positive and negative emotions. Positive emotions are more represented, as trust (n = 315), comfort (n = 256), affection (n = 228), joy (n = 198), while the most represented negative resulting to be anxiety (n = 310).

The prevalence of positive emotions might be related to the well being of the labor, which induce to suppose that, a stronger support to the woman, a better quality of survey and relation, joined to a careful evaluation of the extrinsic factors, may positively influence the experience of the event childbirth, as told by 44.8% of the women, who were interviewed.

### Limitations of the Study

This study offers some limits: random samples, bureaucratic difficulties regarding authorization to collect data within the single sites. A self limiting aspect arises from the nature of the study, being descriptive, it didn't allow an inferential analysis of data.

### Conclusion

This study has shown that extrinsic factors such as place, environment and assisting organization may have influence on the evolution of the labor and on the emotional aspects experienced by the woman. The information that professionals give, regarding procedures used, which seem to be poor in the different aspects investigated and would have allowed the woman informed choices, have a relevant aspect in the evolution of these experiences.

This is the main reason for which there is a need to go back to the respect of the physiology of the childbirth, to the observation of the woman, with her needs and behaviours, paying attention to the management of the labor, with a neuroendocrine view, underlying the importance that thoughts and emotions have on this last, regarding the environment in which the woman is, in order to adapt an assisting approach related to it.

### Statement of Significance

#### Problem of issue

Extreme medicalization may influence the woman experience during labor and birth both clinically and emotionally assuming wrong behaviours.

#### What is already known

External environment, specially disturbed one, influence the labor, provoking a slow down or an arrest of the labor itself. 'One to one' assistance and a neuroendocrine view of birth make women conscious and empowered.

#### What this study add

This study investigate the phenomenon of medicalization to understand how much extrinsic factors really influence woman labor. This study will certainly have a valid impact on obstetric practice because professionals, understanding the importance of the woman's psychoneuroendocrine balance, will have a management of labor that reflects the physiology of birth with less application of invasive procedures (caesarean section and operative vaginal delivery).

### Authors Contribution

RP led this research including proposal write up and designed the instrument. RP, GFP and FS collected and analysed data. RP, GFP, FS, RT discussed data and wrote the manuscript. All authors read and approved the final manuscript.

### Ethical Statement

The survey was voluntary and anonymous, no personal data were recorded, in no way it was possible to identify the single respondents. Informed consent was obtained from all participants. Data were acquired in compliance with GDPR regulation (General Data Protection Regulation, European Union 2016/679).

### Funding

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### Conflict of Interest

None.

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