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Effect of the music in labor and newborn

EFEITO DA MÚSICA NO TRABALHO DE PARTO E NO RECÉM-NASCIDO

EFECTO DE LA MUSICA EN EL TRABAJO DE PARTO Y EN EL RECIÉN NACIDO

Camila Sotilo Tabarro[1], Luciane Botinhon de Campos[2], Natália Oliveira Galli[3], Neil Ferreira Novo[4], Valdina Marins Pereira[5]

ABSTRACT

Music has been applied for balancing energies that have been disturbed by the stress of modern life. The objective of the present study was to verify the effect of music in labor and on the newborn, when submitted to the same melodies heard by their own mothers during pregnancy. Pregnant women, Health Center users, were submitted to musical sensitization sessions since their fifth month of pregnancy. During labor, the melodies previously selected by the pregnant women were played all the time with a thirty-minute break for every two hours of music. Data collection was performed through interviews performed after labor, at different moments, and the mother' statements were qualitatively analyzed. According to the women's *words*, music minimized the distress of labor and made it easier for the baby to adjust in the first months of life.

KEY WORDS

Music therapy.
Parturition.
Humanizing delivery.
Infant, newborn.

RESUMO

A música tem sido aplicada para o equilíbrio de energias alteradas pelo stress do mundo moderno. Este estudo objetivou verificar o efeito da música no trabalho de parto e no recém-nascido, quando submetido às mesmas melodias ouvidas por suas mães na gestação. Gestantes, usuárias de Unidades Básicas de Saúde, foram submetidas a sessões de sensibilização musical a partir do quinto mês de gestação. Durante o trabalho de parto, a parturiente foi submetida às melodias selecionadas por ela, com interrupções de 30 minutos a cada duas horas. Os dados foram coletados em três entrevistas realizadas após o parto, em diferentes momentos, e o discurso obtido foi analisado qualitativamente. Constatou-se, pelo conteúdo das *falas*, que a música minimizou os desconfortos do trabalho de parto e facilitou a adaptação do bebê nos primeiros meses de vida.

DESCRITORES

Musicoterapia.
Parto.
Parto humanizado.
Recém-nascido.

RESUMEN

La música ha sido aplicada para el equilibrio de las energías alteradas por el estrés del mundo moderno. Este estudio tuvo por objetivo verificar el efecto de la música en el trabajo de parto y en el recién nacido cuando es expuesto a las mismas melodías oídas por sus madres durante el embarazo. Mujeres embarazadas atendidas en Unidades Básicas de Salud fueron expuestas a períodos de sensibilización musical a partir del quinto mes de embarazo. Durante el trabajo de parto, la parturienta escuchó las melodías elegidas por ella misma, con interrupciones de 30 minutos cada dos horas. Los datos fueron recolectados en tres entrevistas realizadas en diferentes momentos; las respuestas obtenidas fueron analizadas cualitativamente. Los autores constataron en las respuestas a las entrevistas que la música minimizó las incomodidades del trabajo de parto y facilitó la adaptación del bebé en sus primeros meses de vida.

DESCRIPTORES

Musicoterapia.
Parto.
Parto humanizado.
Recién nacido.

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INTRODUCTION

The initial interest in exploring the possible role of music in the care delivered to pregnant and parturient women and also its potential effects on newborns is based on continuous, though not systematic, observations of the daily routine of nurses' practice. We have observed on several occasions that the use of medication has caused, not infrequently, more harm than good to people. And this especially occurs during labor, which we know is a physiological phenomenon and might be without complications in about 90% of cases.

Having for several years prepared pregnant women for labor and delivery, we have used music in relaxation sessions, which is a practice used at the beginning of each meeting. A tape-recorded copy of the songs used during relaxation sessions was offered to many of these women and it was suggest that they play it to their babies. We have obtained, though not in a systematic way, interesting reports of these mothers concerning the reactions of their newborns when exposed to the songs used during the relaxation sessions such as: infants would stop crying, would easily fall asleep, among other responses. The reports from these mothers encouraged us to explore this subject in greater detail, including additional pertinent readings.

The hypothesis was that the use of music, a procedure of simple implementation with low cost, would combine with other elements of delivery care to harmonize the dynamics of labor, individualizing care and, hopefully, promoting a larger number of normal deliveries.

Music is traditionally present in various important rituals in the lives of humans in society. There are melodies appropriate for weddings, birthdays, lullabies, civic events, religious rituals, funerals, etc. Hence, music is found in all cultures through world, even in those that are most primitive and deprived of technological knowledge.

Music, according to one specific dictionary[1], *... is the art of combining sounds so as to please the ear to put intelligence into action, speak to feelings and move the soul*. As science, music is a disposition of sounds so as to include three elements: melody, rhythm and harmony.

Some sciences such as physics, acoustics and mathematics contributed to explain the production of sounds, though they could not unveil the effects produced by music in human beings. The following text[2] masterfully summarizes this reflection:

> A physician will tell you that the agitation of air molecules are very alike for any ears, whether the ears of a frog, a cow or of a human being. But a psychologist will admonish that the sensations derived from these vibrations greatly varies from one species to another.

Music therapy, a science organized in the 20th century, studies the therapeutic effects of music on human beings. Biomusic on the other hand, is applicable to healthy people and aids re-balancing behavior altered by the pressure of modern life. One of the pioneers in this field[3] reports a long list of benefits promoted by the Biomusic, of which we highlight some for this study:

- Slows and deepens breathing;
- Increases resistance to sensorial excitement;
- Fights stress;
- Enables mastering affective forces and
- Aids the good functioning of physiology.

OBJECTIVE

- To verify and describe the effects of individually selected songs during the labor of women cared for in five maternity wards;
- To verify the behavior and reactions of babies when exposed to songs heard by their mothers during pregnancy and labor, through the reports of mothers obtained in the first three months after delivery.

METHOD

The pregnant women were approached in four Basic Health Units (BHU) in Sorocaba, SP, Brazil. Later on, one unit in Porto Feliz, SP, a city located about 40 km from Sorocaba was also included. This inclusion was facilitated by one of the researchers who lived in the city and enlarged the sample. The pregnant women were invited to participate in weekly meetings from the 20th week of pregnancy on in order to be musically sensitized.

The following inclusion criteria were used in this study:

- Being registered in the BHUs chosen for this study;
- Being classified as a low risk pregnancy;
- Not being hearing impaired;
- Having participated in at least five sessions of musical awareness;
- Having agreed to deliver in one of the indicated maternities;
- Having labor and delivery between the 37th and 42nd week of pregnancy;
- Accepting the conditions of this study and signing a free and informed consent form (according to the Resolution 196/96 of the Brazilian Health Council).

A sheet with identification data and information about previous experience with music was filled out in the first meeting. Mattresses and pillows were distributed in a room

free of noise – as much as possible – and women, comfortably accommodated, participated in a musical awareness session.

Musical awareness – Through a portable tape player, a series of 8 to 10 melodies, specifically selected for this study, were played at a volume acceptable to the group. The period reserved for this experience varied from 35 to 45 minutes. At the end of each session, the pregnant women individually answered some questions about how they felt while listening to the music, which ones pleased them more and whether any of them had caused unpleasant sensations/memories. This information was noted on an appropriate sheet and attached to the woman's registration form.

A series of different compositions was listened to by the same group in each session. The groups varied from two to nine women.

The information registered on each woman's forms was used to record individualized CDs, which were then given to each mother-to-be with the recommendation to take it to the delivery facility at the time of delivery.

The follow-up of the parturient women was carried out in the maternity wards of the *Santa Lucinda, Dr. Linneu de Matos Silveira* and *Santa Casa de Misericórdia* hospitals in Sorocaba, SP; *Santo Antônio* Hospital in Votorantim,SP and *Santa Casa de Misericórdia* Hospital in Porto Feliz, SP, Brazil.

As established for this study, during the observation of labor, music was turned off for 30 minutes every two hours. At the end of each period (*with* and *without* music) the elements that indicate the development of labor (frequency, intensity and duration of contractions, frequency of fetal cardio-beat, the mother's heart and breathing rates) were recorded on a form.

When a C-section was indicated during the labor, the woman was excluded from the sample, however, whenever she expressed the desire to continue the music, it was maintained. This mother was included for the household visit after delivery in order to answer a qualitative evaluation concerning the effects of music on her child.

Newborns to be included in the study should:

• Have an APGAR score above 7 (seven) in the five-minute evaluation;

• Have the mother's authorization for the household visit after discharge.

The songs used in the awareness sessions were selected according to the literature[1-2] and included the erudite genres of the periods: Baroque (Bach, Vivaldi), classical (Mozart) and romantic (Chopin, Listz, Schubert), contemporary compositions of Steven Halpern, Geórgia Kelly, Alexandre Guerra, Ênia and some from the Japanese folk music.

Two methods were used for data collection: the parameters of labor development were recorded and semi-structured interviews, which were carried out at three different points in time.

1st - In the first 24 hours post-delivery (PP1);

2nd - between two and four months post-delivery (PP2) and

3rd - up to the third month post-delivery to register the perceptions of mothers about the effects of music on infants.

The reports obtained during the interviews were tape-recorded, fully transcribed and analyzed according to the authors' proposal[4]: determining the reports' Units of Meaning and categorizing them afterwards. The various categories were then analyzed based on the study's objectives.

This study was approved by the Ethics Research Committee at the Center of Medical and Biological Sciences in Sorocaba (PUCSP), on May 10, 2004 under Nº 390 according to the resolution 196/96 of the Brazilian Health Council.

RESULTS AND DISCUSSION

Although 87 pregnant women were included in the group, only 27 (31%) met the inclusion criteria, that is, participated in at least five or more awareness sessions. This condition was the first obstacle to obtaining a satisfactory sample. Nine out of the 27 had C-sections, five did not inform the researchers when they went to the maternity and one had hypertension at the end of her pregnancy, hence 15 women were excluded from the labor analysis.

Therefore, 12 women had their labor accompanied by songs of their choice and were interviewed after delivery. Twenty mothers were interviewed concerning the effect of music on their newborns (11 infants were born through normal deliveries and nine through C-sections); one of the 12 women followed during labor did not have a portable stereo during the puerperium and could not observe the effect of music on her child.

Great similarity of parity and age was observed among the 87 women initially included in the sample and the group of the 12 who met the inclusion criteria. The two groups differed in only three aspects: the infants' weight was slightly heavier in the group of 12 mothers; the Apgar score was between 9 and 10 at the five-minute evaluation for 100% of infants accompanied by music (which occurred in only 90% of the 87 mothers) and regarding previous experience with music, which was considerably higher among the 12 pregnant women, that is, 91% of these listened to their parents singing during their childhood (only 54% among the 87). These previous experiences might have contributed to the higher adherence of these women to the project.

After analysis of the women's preferences, considerable differences were observed in relation to their reactions to the same songs. A study corroborates this observation about the effects of music on chronic pain[5] and cautions about the importance of taking into account individual pref-

erences in a pre-determined set of songs specific to each situation. At the end of the study, the most rejected compositions were replaced by other appropriate ones, which resulted in five melodic series, recorded on five CDs.

The pregnant women's most chosen compositions were the following in decreasing order:

20 choices:

• Melody of the Japanese folk song called *Aka Tombo*, by Kôsaku Yamada (extracted from the CD *Japanese Melodies* of the Denon Records).

17 to 15 choices:

• *Ave Maria* by Bach-Gounod, extracted from the CD *Silence* volume 2 (called Rainbow), recorded by Paulus

• Blue Danube by R. Strauss, played by the Vienna State Opera Orchestra governed by Albert Lizzio (excerpt), do CD *Strauss*, recorded by Apollo Classics

• *Aurora do Coração* by Alexandre Guerra (contemporary Brazilian composer), extracted from the CD *Gestação – Música suave para gestantes* [Gestation – Soft music for pregnant women], recorded by Azul Music.

• A*us dem Flötenkonzert e-moll* – Andante – de Buffardin, with solo flute by Eckart Haupt accompanied by Dresdner Barocksolisten, extracted from the CD *Die Flöte*, recorded by Laserlight.

• *Air in D major suite n. 2* (Air on the 4th string) by J.S. Bach, extracted from the CD *Silence* – volume 2, (it does not mention the players), recorded by Paulus

• *Greensleaves* for flute and harp, by anonymous composer (1600), with Jean-Pierre Rampal on flute and Lily Laskine on harp, extracted from the CD *The best of Jean-Pierre Rampal*, acomp. Orchestre de Chambre de Jean-François Paillard, recorded by Erato Disques S.A.

• *Midnight in Maksimir,* by Geórgia Kelly , CD *Gardens of the Sun*, harp solo by Geórgia Kelly, recorded by Global Pacific Records.

It is important to keep in mind that the sample was extremely diversified in relation to sociocultural conditions and level of education, since the clientele were from BHUs located in different geographic locations. In one of these units, the sessions were carried out in a container approximately $9m^2$, showing that physical conditions are not an impediment to implement humanizing actions in care delivery.

Despite the recording of physiological parameters of labor development in the attempt to obtain an objective evaluation of the music effect, a valid analysis of these variables was not possible due the routine use of oxytocin and the artificial rupture of the amniotic sac in the involved maternities. These procedures influence delivery process development.

The central part of this study was the analysis of the mothers' reports concerning their experience of having their labor accompanied by music. The comparison basis was the 30-minute periods without music included in the methodology. The proposal of Szymanski et al.[4] was used in the analysis of the reports, which helped to determine the Units of Meaning and posterior categorization. The various categories were then analyzed based on the study's objectives.

All the reports obtained through tape recording the interviews were transcribed verbatim and analyzed based on the Units of Meaning that emerged from them. These reports were fully analyzed and were not restricted to the guiding questions, because interviewees did not always follow the interviews expected order. The women's feelings and what they wanted to express concerning their experience of having their labor accompanied by music were a priority during the interview. Thus, the content of the reports, which sometimes did not exactly answer to the script item but were meaningful to the mother at the moment, was considered.

The fact that women are, in the period right after delivery, generally altered by emotion and hormones freed during the process motivated the researchers to include a second opportunity to listen to them about their labors, though two months after it. The script of both interviews was the same. We expected that women, not biased by (or at least less subject to) the influence of strong emotions that accompany the birth of a child, would provide a more conscious and truthful report about the experience of delivering a baby with music. Hence, 10 out of the 12 mothers who gave birth with music were interviewed in their households after two months and before six months after deliver.

The following analyzed content originated from three points in time:

• Interviews carried out with 12 mothers in the first 24 hours after delivery in the maternity (PP 1)

• Interviews carried out with 10 mothers between 2 to 6 months after delivery. Two mothers moved and could not be found (PP 2)

• Interviews addressing the effect of music on infants' behavior carried out in the first three months after birth with 20 mothers (NB)

Analysis of interviews carried out immediately after delivery (PP 1)

Some of the categories that focus on the units of meanings of reports following transcribed permit us to infer that music can benefit women during labor. Although these benefits are not measurable, they are relevant. We highlight that women from varied socioeconomic, cultural and educational levels were included in this study.

CATEGORY: Pleasant Sensations

Tranquility, peace

"Sense of tranquility, you know, that the baby was there… was coming, tranquility, that peace that music…"(2)

The only moment of tranquility I had was with music… it was what reassured me… (12).

Pain relief

... you feel that pain, suddenly, it eases and music seems that, wow, relieves it… takes out the tension of pain...(4)

The different sensation I had is that music seems to relieve pain (10).

Safety, calm

Look, look, I felt safe… (13).

It reminded me of home and I pretended I was… music made me calm. The…3rd one was the one that made me calmer (14).

CATEGORY: Positive situations

Ambiance

...because I had already listened to the music at home, I guess the music made me calmer... (21).

...at the time I entered the delivery room and you put the music on I felt myself at home… (41).

Bond between parturient woman/professional, support, stimulus

Well, the help counts more (36).

...a certain bond was created, like, with your team… It is a moment in which you really need trust… (37).

...the moment you feel pain and have to push, is something you never learn, nobody teaches us… in the case you provide this stimulus is much better than stay there by yourself (39).

CATEGORY: The music's beneficial effect

Perceiving the difference between the periods with and without music

You perceive the difference in these intervals of half a hour and which you don't have music, it seems that you keep listening…I really missed it…at that moment, that short interval, then you feel that with the music you really get calmer, start to relax, really... (41).

I could note the difference between having music to listen and the mothers who don't, two mothers arrived and wow…, they were about to die, it seemed so (42).

I missed it in the moments without music. Got anxious. I became more concentrated on pain. Music relaxes… without it, it was empty! (44).

... I remember that I got nervous during contractions, and when there was no music, I really couldn't control myself… and when music was on, I got calm even during the most difficult contractions…I didn't like when the sound was turned down or when it was turned off, I didn't like it at all. It helps to relax… so much that I got really upset when they turned off the music (45).

The non-musical interludes at every two hours allowed women to compare the periods with and without music. A similar study using music during labor over intermittent periods also recorded changes in each mother's state of relaxation and response to pain. According to the author, women *drastically* changed when music was turned off and the reports of these women were very similar to those obtained in this study, such as: *I could not have done what I did without music*[6].

The terms *tranquility* and *calmness* were mentioned several times in the reports of this study as well as *pain relief* and women attributed these feelings to music, which according to the reports, made the contractions more bearable. This is not a purely psychological phenomenon since, when music pleases the listener, the brain releases endorphins into the blood, one neuropeptide produced by the pituitary, which efficaciously reduces pain. Scientific studies[7] have shown that Baroque compositions, especially the slow movements, have a predictable rhythm between 55 and 70 beats per minute, which promotes a more relaxed state of the brain, stimulating the release of endorphins and reducing stress hormones.

Analysis of interviews carried out late postpartum – PP 2

CATEGORY: Pleasing sensations

Tranquility/Relaxation

Tranquility, a so good memory… it makes you miss it…the benefit to the child and the tranquility of the mother (3).

When it was strong, at that time in the room, then it was good… because it relaxed me, you know, that thing, good sensation, then when it turned back… (5).

CATEGORY: The music benefic effect

Safety

… I had the opportunity to have music, the physician, and my husband… (laugh) everything in the same room. So… I felt very safe (11).

I was by myself there, sometimes there was no one to talk to… so I always came here (awareness sessions), I left here calmer. I felt like relieved, I left tranquil here, serene, without fear of facing the pregnancy, my son… (12).

Pain relief, positive comparison, *with* music and *without* music)

...no, I was calm and didn't have so much pain as everybody says and I that thought I would have (6).

…it hurt less, it seems that it hurt less when the music was on... (7).

I got upset when music was turned off!"(17)

I'd go to the bathroom to take a shower and leave the door open so I could listen to music (laugh) (18).

... I was, you know… with that pain that wouldn't go away… and that music, sometimes I'd lie down and keep listening to it, wow so good!(21).

I don't know how it is to have a baby without music, I felt relaxed… it hurt less, it seems that it hurt much more when the music was off... (36)

...with music I relaxed much more… I knew, I knew that in the interval… it seemed that the pain increased... (37)

... oddly enough, at the moment it stopped, that interval I… missed it… it seemed something was missing… something… that supplied something… (38).

Ambiance

...I heard it well, it was the first music of the CD that played at the moment she was born, the time the music played again, then you turned it on in the delivery room, wow, it seemed it came back to normal… what was happening, like… very good… (13).

Religiosity

I… it is a unique moment you know (laugh)… Music made a difference, especially because I'm Catholic, so my selection had Ave Maria, and every time it started to play, at the time the Ave Maria played, then, obviously that I was praying a lot, and at the time Ave Maria played, it seemed it gave me strength… (34).

CATEGORY: Positive experience

Pleasant memory of the delivery, nostalgia

Tranquility, a so good memory… it makes me miss it… (3).

... I remember listening to the song in the soap opera and I said: *wow, this song is the one that was playing when Ana Laura was born*…and already looked at her. Really, it gives me a sense of happiness (20).

I said to Gabriel: *Gabriel, this is our little song…* Of course I suffered, had pain…but it was so…that today I don't remember it, I even miss it, you know…I don't remember the pain, as a suffering pain... (40)

...and the song. The song makes me miss it, I wish I could live it again… a pleasant feeling! (42).

Analyzing the Units of Meaning of the second postpartum interview, we observed that the reports confirmed the sensations of tranquility and calmness, how music helped them to relax and relieved their pain during labor. We observe that the differences between the periods *with* and *without* music were very marked to women and it was reinforced in the expressions of the second interview.

It is worth noting that the *ambiance* created by the music allowed the women in the delivery unit to more easily adapt, since all of them already knew the compositions used during labor. This feeling was expressed in some reports previously mentioned.

Another aspect, not less important, was the *support* provided by the presence of researchers during labor and this fact is valued in two post-delivery interviews. The literature confirms that music enables a non-verbal connection, *connects the looks*, favors *connection between subjects*, an empathic rapport between people that only occurs in a *Me-You* relationship[8], which is indispensable to the humanization of care. It is important to mention that companions were not allowed during labor in the routine of the maternity where this study was carried out. According to the State law nº 10.241 (SP) of March 17th[9] and more recently, to the Federal law nº 11.108, of April 7th, 2005[10], women have the right to have a companion during labor, delivery and post delivery.

The connection of music to the women's latent religiosity was more strongly expressed in the second interview. Religiosity was aroused in two participants by the *Ave Maria* by Bach-Gounod, and which became a reference of labor memory for these women. One of the founders of the Center for Research in Primal Health[11] indicates this connection between birth and prayer: *praying effectively reduces the activity of the neo-cortical 'supercomputer' and can help some people to reach another reality, beyond time and space*.

The categories found at both points at which mothers were interviewed were similar and converged to *positive sensations*, *positive situations* and *valorization of the experience* of labor with music. This study allowed the participants to infer the benefits described in related literature. Common perceptions conceives *labor pain* as a pain that is forgotten over time. The participants' reports show that it is not always the case. Music permitted these women to remember their labor with pleasant feelings and even *miss* it.

Analysis of the interviews carried out with mothers concerning the effect of music on newborns – NB

CATEGORY: Positive situations

Infants recognized the songs –

...recognizes it and stops to listen (1).

First I guess he recognizes the songs, because these are the songs I heard during pregnancy, I usually murmur (the songs)… and he sleeps (2).

She stays calm, you know? When she goes out, when she's crying… when has a tummy ache… she gets calm…she really gets calmer with music, it's more much reassuring. It's different! (4).

So the CD, the songs, especially of the CD, you see that it draws her attention. It's really amazing! (5).

It's impressive, you know? And he keeps looking at the radio looking for the song… (6).

She recognized the song and kept looking for where it came from... (7).

... Ah, she makes that laughing face… (8).

She stops and pays attention to music… (14).

When he's nursing…he stays like…nursing and paying attention…in the sound of music…he nurses quiet…stays quiet, listening… like there was something else there… paying attention really… on the little song… I see he pays attention to music… stays listening… (19).

On the first day I put it on I noticed she stayed like…it seemed that she already knew it, you know, the song. Then, I talked to her, said: you've already listened to it in my tummy, right? …she pays attention… to the song… already perceives the sound… she likes music, and will certainly like it when she grows up… (20).

... He is calm, sometimes he wakes up and observes the songs (21).

You notice that he keeps observing, attentive… (22)

I found it funny, you know, she immediately stopped crying, you know… she paid attention…it was at the beginning you know… (40).

CATEGORY: The music favorable results

Calmness, tranquility

when she gets cranky, then she calms down, looks for the song and stops nursing (3).

I put it on…like when I'm bathing her, you know… then I put the song on and she calms down (9).

I put it on every morning when she gets agitated, then she calms down (12).

...now I put it everyday... I feel he's calmer…when he's cranky I feel the little song calms him down! (17).

It already happened when she's crying a lot, when she wants to nurse and I'm not here, you know?...my mom put it (music) on because she gets calm… (31).

He likes it, gets calm and even sleeps (32).

He stays pretty quiet… (33).

...She also calms down when she listen to it, stops crying and start to pay attention (34).

...I put her here on the sofa and she listen to it and even sleeps. She gets calmer (35).

Cramps relief

And in the first month, mainly the period when he had cramps… it helped him to fall asleep…and I was able to put him in bed (38).

She was having a lot of tummy aches in the beginning… was crying a lot…so I put it on for her one day… I noticed she got pretty calm, you know…I put the micro system near her, you know…you've already heard it in my tummy, right? (40).

She was having a lot of cramps…now she got better (42).

Ambiance

As we've moved from the apartment, I put it on to help him to get familiar with our new place… and really, he easily adapted to the place. He's slept pretty well since the first night here in the new apartment… There was something he already knows… (10).

... he started to feel unease in the house, you know…he started to cry, he cried and…then I remembered the music. The little song started to play, and then I put him on my lap…put him very close to me, with music, dancing with him and he calmed down... (18).

Due to lack of space, only the most significant reports were presented here and for this reason, the numbers are discontinued. The fact that the infants recognized the songs appeared many times in the mothers' reports. Music also helped infants to adapt when the families had to move or even to begin to feel at home after discharge from maternity.

According to the reports concerning the relief of newborns' cramps, the use of music was also beneficial. Likewise, the number of references to these units of meaning was also considerable: inducing calmness and tranquility for babies. Although this is a subjective evaluation of mothers, we know from previous studies that the influence of music on beings is an effect of physics: external sound vibrations are reproduced inside the human body leading to changes not very well clarified so far. It is important to keep in mind that the fetus has hearing abilities from about the 4^{th} or 5^{th} month and, in addition to being able to pick up sound vibrations through hearing, the fetus also receives vibrations from the mother's body[11]. Therefore the importance and universality of lullabies, which should be sung by mothers from the beginning of pregnancy.

Observation was limited to the infants' third month of life, though the literature shows that other favorable effects can accrue from the development of children exposed to appropriate music, such as: better space-time discrimination, ease of language development and socialization[7].

FINAL CONSIDERATIONS

This study verified the effects of music during the labor of women who, during pregnancy, listened to music especially selected for this study. The analysis of these women's reports evidenced surprisingly favorable effects in relation to important aspects of the labor experience. A remarkable fact is that none of the women asked to interrupt the music; on the contrary, all of them clearly manifested their desire to maintain the music up to the end of the delivery.

Numerous effects of listening to music were reported, such as pain relief during contractions, reduced tension and fear, "adaptation" of women to the hospital, stimulus to prayer and spirituality. These conditions enabled the parturient women to experience a more efficacious state of relaxation in the intervals between contractions, encouraging a milder and eutocic labor and raising the women's limits of tolerance for pain and discomfort.

The newborns who were exposed early to music during the periods when their mothers were listening to the music presented, according to their mothers' reports, positive reactions when they recognized the songs, whether calming down or sleeping, and paid attention to the songs, sometimes even selectively. Some women reported a reduction in their infants' cramps or consequent crying, which are very common phenomena in the first months and which might disturb the family environment. The observation was limited to the infants' third month of life, though; as with their mothers, they could benefit from the effects of music already evidenced in the literature.

Our goal was to find non-harmful ways to minimize the discomfort of labor and encourage the mother-infant bonding process, enabling women – who become mothers – to live an experience worth remembering. The mothers who participated in this study have convinced us we are on the right path.

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