ORIGINAL ARTICLE

Perinatal Factors Affecting the Detection of Otoacoustic Emissions in Vaginally Delivered, Healthy Newborns, During the First 48 Hours of Life∗,∗∗

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KEYWORDS
Breastfeeding;
Otoacoustic emissions;
Hearing screening

Abstract
Introduction and objectives: Most hospitals perform neonatal hearing screening because it is a very useful procedure. Otoacoustic emissions are an ideal technique for this screening. We analyse the possible influence on screening results of some perinatal factors.

Materials and methods: We collected retrospective data from 8239 healthy newborns delivered vaginally at the maternity ward of our hospital. We compared multiple perinatal factors vs the results of otoacoustic emissions performed within the first 48 h of life, before discharge.

Results: A total of 6.4% of newborns had an abnormal response and failed the screening. Univariate and multivariate analysis showed a significant (P<.0001) positive relationship between breastfeeding and normal otoacoustic emissions (OR: 0.65). Another, less significant factor was female gender. The remaining variables, including origin, education or employment status of the mother, maternal smoking, dystocic delivery, presentation, need for resuscitation, preterm labour (34–36 weeks), weight, length and frequent maternal pathology, such as streptococcus detection, hypothyroidism, hypertension or diabetes, were not significant.

Conclusions: Breastfeeding was the most important factor related to a normal response in otoacoustic emissions. It may improve final results and reduce the number of neonates who need to be rescheduled for a repeated test, as well as the associated anxiety and the possibility of losing patients during follow-up. These are major problems in neonatal hearing screening. © 2013 Elsevier España, S.L. All rights reserved.

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Factores perinatales que influyen en la detección de otoemisiones acústicas en recién nacidos sanos, por parto vaginal, en las primeras 48 horas de vida

Resumen

Introducción y objetivos: Actualmente se hace cribado neonatal de hipoacusia universal en la mayoría de centros, muchos mediante otoemisiones acústicas. Analizamos los factores perina-
tales que podrían influir en el resultado de la prueba.
Material y métodos: Se recogen retrospectivamente los datos de 8.239 recién nacidos sanos de la maternidad del hospital, nacidos por parto vaginal. Se analizan múltiples factores perinata-
les frente al resultado de las otoemisiones sobre las 48 h de vida.
Resultados: El 6,4% tuvieron otoemisiones alteradas. El estudio univariante (Chi-cuadrado) y multivariante resulta muy significativo (p < 0,0001) (OR: 0,65 alterada) para la lactancia materna como factor positivo relacionado con una otoemisión normal. Otro factor menos significativo es el sexo femenino. No resultaron significativos el origen, formación o trabajo de la madre, consumo de tabaco materno, parto distócico, presentación, necesidad de reanimación, ser pre-término tardío (34–36 semanas), peso, talla, ni enfermedad materna frecuente como coloni-
ización por estreptococo, hipotiroidismo, diabetes o hipertensión.
Conclusiones: La lactancia materna es el factor positivo más importante relacionado con la obtención de una otoemisión normal, esto es crucial puesto que podría mejorar el resultado final del cribado auditivo y reducir los niños que se deben volver a citar, con la ansiedad familiar y la sobrecarga asociada, al tiempo que reduce el riesgo de perder al paciente durante el seguimiento.

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Introduction

Screening for hearing loss in newborns leads to earlier initia-
tion of treatment in those affected. This results in a better 
final prognosis, and captures 50% of babies born with ear 
disease but no risk factors, whose early identification would 
otherwise have been impossible.1,3

Several techniques are used. One of the most frequently 
used, for its simplicity, rapidity and low cost is evoked 
otoacoustic emission (EOE) which offers high sensitivity and 
specificity. The problem most current programmes have with oto-
acoustic emissions is the high percentage of children who 
fail the first test after delivery, occasionally over 10%. This 
percentage is much higher than the expected deaf-
ness figure of 3–6 per thousand newborns (NB). Failure 
in initial determination necessarily requires a subsequent 
follow-up test. There is a high probability that babies with 
abnormal responses in this second test will be affected 
and will need more extensive hearing screening with more 
complex techniques as confirmation. For this reason we 
recommend4 a maximum of 4% failure in the second stage 
as an indication of adequate function. This is more in 
line with real incidence and prevents collapse of ENT 
services.

Avoiding the family being made unnecessarily anxious 
about possible disease in their newborn should also be con-
sidered; this figure should therefore be as real as possible.4

Another major problem of hearing screening programmes 
is the loss of patients identified as at risk who, after failing 
the initial test, do not attend for a repetition of the test. 
These patients constitute around 10% in many programmes 
(this varies between 3% and 30%), when realistic objectives 
should accept no more than 5%. These are patients at

Objective

Our study objective was to become aware of the influence 
of diverse perinatal factors in the OAE response as a method 
of universal neonatal hearing screening during the first 
48 h of life.

Material and Methods

We collected retrospective data from all healthy newborns 
delivered vaginally in the maternity ward of the hospital 
between 2002 and 2011 (n=8239).

Exclusion Criteria

Newborns who were admitted to the neonatal centre with 
presentation of any disease, since our study objective con-
cerned healthy newborns. Newborns with Apgar under 7 at 
5 min were excluded. Newborns delivered by caesarean sec-
tion were also excluded because the otoacoustic emissions 
are performed after 72 h and it is known that time has a 
positive influence on initial response.

Protocol

Bilateral OAE screening was performed as close as possible 
to 48 h of life. All nurses performed the screening, on every 
shift, every day of the week, depending on availability and 
pressure of work. Once information and consent had been
verbalises given, the screening was performed in the room,
with as little background noise as possible. It usually took
place after feeds to ensure that the newborn was calm. No
sedation was administered.

Techniques

The OAE were recorded with ECHOCHECK OAE Screener®
based on the ILO88 (Otodynamics Ltd.) system, connected to
the ILO ECP® neonatal probe. It uses a click-type non-linear
stimulus of 1 ms duration, the intensity of which is 84 ± 3 dB
SPL to 80 c/s frequency. The normal result demands a sig-
nal/noise level response above 6 dB. A newborn with normal
bilateral response was accepted as normal. The rest were
classified as impaired.

Statistical Analysis

The variables mentioned below were contrasted with the
first otoacoustic emission results (normal or impaired).

Study Variables

Gender (male vs female), origin (native vs immigrant), pro-
fession (works outside the home vs housewife), education
(primary vs secondary), smoker (yes or no), type of delivery
(normal vs dystocic delivery), presentation (cephalic vs oth-
ers), resuscitation (with ambulance vs other free-flow oxygen
alone), maturity (full term or preterm < 37 weeks), weight
(in grammes), length (in centimetres), and weaning (breast-
feeding/mixed vs artificial).

Common maternal pathologies were also analysed, such as
the detection of antenatal streptococcus (treated with
intrapartum ampicillin), the presence of insulin-dependent
diabetes, treated arterial hypertension, and thyroid dys-
function requiring replacement hormone treatment.

Following frequency analysis of the variables a univari-
ate analysis was done between the otoacoustic emission
response and the study variables with the Chi-squared tests
and odds ratio. The Student’s t-test was used in the numer-
cal variables (weight and length) for independent samples.
All significant variables in the univariate analysis were
selected for multivariate analysis using the Wald method
stepwise binomial logistic regression.

The significance level was established at *P*< .05. The data
were analysed using Excel® data sheet version 2003 and SPSS
statistical programme® version 20.

<table>
<thead>
<tr>
<th>OAE result</th>
<th>No.</th>
<th>Selected healthy NB (%)</th>
<th>Tested NB (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impaired otoacoustic emission</td>
<td>518</td>
<td>6.3</td>
<td>6.4</td>
</tr>
<tr>
<td>Normal otoacoustic emission</td>
<td>7565</td>
<td>91.8</td>
<td>93.6</td>
</tr>
<tr>
<td>Not performed: technical reason</td>
<td>146</td>
<td>1.8</td>
<td>-</td>
</tr>
<tr>
<td>Not performed: rejected by parents</td>
<td>10</td>
<td>0.1</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>8239</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

OAE: evoked otoacoustic emissions; NB: newborns.

Results

Results of the initial otoacoustic emission test (Table 1).

Analysis of the otoacoustic emissions response compared
with diverse perinatal factors (Tables 2 and 3).

Numerical variables: weight and length (Table 4).

Discussion

Hearing Screening Process

The first screening was completed for 98.1% of NB in the
maternity ward (n=8083). 1.8% of the children did not com-
plete the test for several reasons: the child was not in a
condition to take the test; the probe/apparatus broke; there
was insufficient medical care staff, etc. The percentage
according to the CODEPEH I was sufficient to consider the
hearing screening as universal. 0.1% did not take the test
because the parents rejected it or they requested voluntary
dischARGE during the first 24 h. The data provided evidence
of excellent programme adherence and justify the test being
performed every day by all nurses, to avoid the risk of data
loss over the weekend.

Out of the completed tests, 93.6% resulted normal and
6.4% had an abnormal response, which shows a very low
amount referred for second level testing. This is proba-
ble due to the programme having been implemented over
10 years enabling all staff to be trained and keeping fail-
ures under control which could cause incorrect otoacoustic
emission recording.

Variables Studied

Regarding the studied variables, the following findings were
notable.

Weaning

The percentage of breastfed babies in our study (which
includes 3% mixed feeding) was 70.3%. Although this appears
not to be very high, we must consider the study period
(10 years). Over the last few years education on breastfeed-
ing has raised figures to around 75%-80%, more in line with
current trends. The comparison group with artificial milk
was therefore also sufficiently lARGE.

There are very significant differences in the result of
otoacoustic emissions depending on the type of weaning.
There was a lower proportion of abnormal OAE results in the
breastfed group; 5.6% pathologies in this group, compared
Table 2  Otoacoustic Emission vs Perinatal Factors (Chi-squared $2 \times 2$).

<table>
<thead>
<tr>
<th>Healthy vaginal delivery NB</th>
<th>n (%)</th>
<th>1st OAE impaired No. (% of total)</th>
<th>Chi-squared Value of $P$</th>
<th>Failed odds ratio 1st OAR OR (IV 95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>4071 (49.5)</td>
<td>284 (7.1)</td>
<td>$P&lt;.01$</td>
<td>0.79 (0.66–0.94)</td>
</tr>
<tr>
<td>Female</td>
<td>4159 (50.5)</td>
<td>233 (5.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mother’s origin</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Native</td>
<td>5351 (65.5)</td>
<td>327 (4)</td>
<td>$P&lt;.43$</td>
<td></td>
</tr>
<tr>
<td>Immigrant</td>
<td>2823 (34.5)</td>
<td>187 (2.33)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Profession</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>3772 (46.2)</td>
<td>255 (6.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4388 (53.8)</td>
<td>261 (6)</td>
<td>$P&lt;.10$</td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>4655 (59.6)</td>
<td>313 (6.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate</td>
<td>3152 (40.4)</td>
<td>178 (5.7)</td>
<td>$P&lt;.49$</td>
<td></td>
</tr>
<tr>
<td><strong>Smoker</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>6354 (77.5)</td>
<td>392 (6.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1850 (22.5)</td>
<td>126 (7)</td>
<td>$P&lt;.28$</td>
<td></td>
</tr>
<tr>
<td><strong>Type of delivery</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dystocic</td>
<td>1155 (14.1)</td>
<td>65 (5.7)</td>
<td>$P&lt;.30$</td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>7054 (85.9)</td>
<td>451 (6.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cephalic</td>
<td>8205 (99.9)</td>
<td>517 (6.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>12 (0.1)</td>
<td>0 (0)</td>
<td>$P&lt;.69$</td>
<td></td>
</tr>
<tr>
<td><strong>Resuscitation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>7888 (96.8)</td>
<td>501 (6.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>261 (3.2)</td>
<td>10 (3.9)</td>
<td>$P&lt;.98$</td>
<td></td>
</tr>
<tr>
<td><strong>Weaning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artificial</td>
<td>2450 (29.7)</td>
<td>199 (8.3)</td>
<td>$P&lt;.0001$</td>
<td>0.65 (0.54–0.79)</td>
</tr>
<tr>
<td>Breastfed/mixed</td>
<td>5786 (70.3)</td>
<td>319 (5.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gestational age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤37 weeks</td>
<td>222 (2.7)</td>
<td>10 (4.6)</td>
<td>$P&lt;.27$</td>
<td></td>
</tr>
<tr>
<td>&gt;37 weeks</td>
<td>8013 (97.3)</td>
<td>508 (6.5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OAE: evoked otoacoustic emissions.

Table 3  Otoacoustic Emission vs Maternal Pathologies (Chi-squared $2 \times 2$).

<table>
<thead>
<tr>
<th>Vaginally delivered healthy NB</th>
<th>No. (%)</th>
<th>1st OAE impaired No. (% of total)</th>
<th>Chi-squared Value of $P$</th>
<th>Odds ratio of 1st impaired OAE OR (IC 95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Streptococcus</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1186 (14.4)</td>
<td>68 (5.8)</td>
<td>$P&lt;.38$</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>7053 (85.6)</td>
<td>450 (6.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Diabetes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>162 (2)</td>
<td>10 (6.4)</td>
<td>$P&lt;.98$</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>8077 (98)</td>
<td>508 (6.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hypertension</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>77 (0.9)</td>
<td>7 (9.2)</td>
<td>$P&lt;.32$</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>8162 (99.1)</td>
<td>511 (6.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Thyroids</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>85 (1)</td>
<td>4 (4.7)</td>
<td>$P&lt;.51$</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>8154 (99)</td>
<td>514 (6.4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OAE: evoked otoacoustic emissions; NB: newborns.
with 8.3% in NB with artificial milk (P < .0001) and an odds ratio (OR) of abnormal results of 0.65 (0.54–0.79) in favour of breastfeeding as a factor of protection. This significance level is the highest of all analysed factors (Table 2).

In the light of these results, it appears that breastfeeding may have a positive influence on achieving normal otoacoustic emissions and be a leading prenatal factor. This factor is easily amendable unlike other factors studied, which increases its value. In theory, this is of great interest, since the incidence of abnormal results in the first test could decrease by simply increasing the proportion of breastfeeding mothers by means of appropriate prenatal education and good postnatal support.

The target of reducing false positives in initial hearing screening is vital for the programme to work well since this reduces the number of babies who would require a repeat outpatient appointment, with the healthcare overload this entails. The risk of patient follow-up loss also drops. Both are major problems with this type of programme.

A reduction in the number of newborns considered to have disorders would also result in reducing the anxiety of their families on being informed of abnormal test results. This is another aspect of the hearing screening programme under discussion.

The reasons that breastfeeding could lead to an improvement in the detection of otoacoustic emissions are as yet unknown, but could include factors such as breastfeeding posture preventing milk from leaking into the Eustachian tube or newborns having to suck vigorously compared to the lesser effort required to drink artificial milk, thus helping middle ear ventilation and as a consequence otoacoustic emission recording. Garcia et al.1 concluded a study of 60 newborns aged between 0 and 4 months and showed that the babies who breastfed had better tympanometry and a higher proportion of normal otoacoustic emissions. This difference could also affect maturational factors of the hearing system linked to breast milk, as occurs in other systems. An additional factor to consider is that the test was easier to do in a breastfed NB as they were more relaxed. In this regard, studies expressly aimed at these factors during the first 48 h of life need to be conducted.

Table 4 Numerical Factors (Student’s t-test).

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean</th>
<th>SD</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>3245.92</td>
<td>411.35</td>
<td>.043</td>
</tr>
<tr>
<td>Length</td>
<td>49.51</td>
<td>1.89</td>
<td>.38</td>
</tr>
</tbody>
</table>

SD: standard deviation; OAE: evoked otoacoustic emissions.

Gender
The sample had a minimal preponderance of the female gender (50.5%). This was not significant.

Gender appears to be another major factor in OAE results, with a significantly larger proportion of females with normal OAE (P < .010) with an OR of 0.79 (0.66–0.94) for the female gender as a protection factor. This has already been described in several studies which provide evidence of males having more abnormal otoacoustic emissions.9,10 The explanation for these gender differences could be due to prenatal masculinisation processes and the functional asymmetry of the medial olivocochlear efferent system is yet to be determined.

Mother’s Employment, Education, Origin and Type of Delivery
No significant differences were found.

Smoking
Smoking was analysed, with no impact on quantity or time. 22.5% of mothers stated they were smokers. No significant differences were found.

This is a very interesting result, since the effect of smoking on cochlear health has been well documented and specific studies compare the effect of smoking on otoacoustic emissions, demonstrating that their intensity is lower if the mothers smoked during pregnancy,9,10 regardless of the number of cigarettes. One explanation for this could be the extreme sensitivity of the outer hair cells (responsible for otoacoustic emissions) to hypoxia, since it is known that nicotine produces a vasospasm which reduces the amount of oxygen brought to the cochlear. In addition, there is increased blood viscosity which would cause cochlear damage and reduce otoacoustic emission response. The foetus could be particularly sensitive to this toxin because according to Korres et al.,9 nicotine easily enters the placenta and may reach foetal plasma concentration levels 15% higher than those in the mother. In addition, the concentration in amniotic fluid is also higher, up to 54% higher than that of the mother, and concentration in the foetus therefore increases from swallowing the fluid. This increases the effect on the outer hair cells, which also have direct nicotinic acetylcholine receptors, adding to the hypoxic effect of the previously mentioned vasoconstriction.

A useful complement here would be studies on the effect of passive smoking (fathers who smoke but mothers who do not), and also a study on the veracity of the perinatal survey responses, since the said studies showed that up to 4% of mothers had cotinine in their urine, despite stating they were non-smokers.

Although all these hypotheses appeal, our study did not support any significant negative effect on otoacoustic emission. Possibly the effect is very immediate and assuming the great majority of mothers did not smoke during their hospital stay, this could explain the result. Another possibility is that other more powerful perinatal factors existed, which had a neutralising effect.
Presentation
Cephalic presentation at birth was coded (99.9%) vs other presentations (n=12). The low percentage of the latter is because many mothers requested caesarean section and were not included in this study, to avoid biases. There were no significant differences regarding presentation, but the sample is small and studies should be designed to confirm this.

Resuscitation
The need for NB resuscitation was classified as any type of resuscitation from ambu ventilation n=261 (3.2%), not from free-flow oxygen and tactile stimulation. There were no significant differences with regard to resuscitation. These were healthy babies with Apgar over 7 at 5 min; therefore there should have been minimal perinatal suffering and studies should be designed to confirm this. However, given the sensitivity of the inner ear to hypoxia, this result would support the idea that the examined newborns were totally healthy and minor resuscitation had no impact.

Gestational Age
The mean was 39 weeks, with a range from 34 to 42 weeks and a SD of 1.19. Newborns up to 37 weeks were recoded as preterm (PTNB) at 2.7% (n=222) vs from 37 weeks (full term). There were no significant differences with regard to gestational age with this division. The great majority of the total PTNB (74%) were aged 36–37 weeks, just 19% were aged 35–36 weeks and 7% were aged 34–35 weeks.
This contrasts with published material with higher PTNB failures, but this could be due to the fact that only babies in the maternity ward were studied, and these babies were late preterm (over 34 weeks), with no concomitant risk factors, very similar in response to full term NBs.

Maternal Pathology
Analysis of pathologies affecting the mother (Table 3) was not significant regarding streptococcus detection and treatment, insulin-dependent diabetes, hypertension or thyroid dysfunction with treatment.

Weight and Length
The numerical variable studies (weight, length) were not significant (Table 4). Of consideration is the fact that none of these children were very low in weight, from which we may conclude that moderately low weights (which is the maximum staying in the maternity ward) behave like full term with regard to otoacoustic emissions.
Following factor significance, we performed a multivariate analysis with binomial logistic regression to assess the weight of each factor on the result. On cross-referencing of the significant variables two remained, demonstrating that they were both independent: breast feeding (P<.001) (OR: 0.65) which is the novelty of this study, and female gender (P<.010) (OR: 0.79) which was already demonstrated in other studies.

Study Limitations
The case selection meant that some groups were small, with a need for more extensive samples to confirm statistical validity. However, the selection itself is the greatest virtue of this study, since these were totally healthy children, without interference from other known factors, such as NB disease or delivery by caesarean section, which for our case, due to the longer stay required, means that tests can be performed on the third day and would present a higher incidence of impaired OAE according to Smolkin et al.

Another limitation is that only the initial response to the test was analysed, without knowing the final hearing status it confirmed. A further study therefore needs to be designed to analyse the final result of the false and true positives of the hearing screening.

Conclusions
Breastfeeding is shown as the most important factor related to a normal response in otoacoustic emissions and passing the neonatal hearing test during the first 48 h of life. This relationship suggests that increasing the rate of breastfeeding through appropriate prenatal education could improve initial hearing screening results and thus reduce the need for a repeated test, which in turn would reduce associated anxiety for the family and the loss of patients during follow-up of the programme.
A further factor which impacted the result is gender (females present better results), which has already been referred to in other studies.
The other factors analysed were not significant. The mother’s smoking habits not being significant and late preterm labour are worthy of note, described in other studies as a negative factor for otoacoustic emissions.

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Conflict of Interests
The authors have no conflict of interests to declare.

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