

Limits of Viability: Perspectives of Portuguese Neonatologists and Obstetricians

Limiar da Viabilidade: A Perspetiva dos Neonatologistas e Obstetras Portugueses

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Acta Med Port (In Press) • <https://doi.org/10.20344/amp.21473>

ABSTRACT

Introduction: Advances in neonatal care have improved the prognosis in extremely preterm infants. The gestational age considered for active treatment has decreased globally. Despite implemented guidelines, several studies show variability in practice. The aim of this study was to understand the perspectives of Portuguese neonatologists and obstetricians regarding the management of extremely preterm infants.

Methods: An online survey was sent through the Portuguese Neonatology Society and the Portuguese Society of Obstetrics and Maternal-Fetal Medicine from August to September 2023.

Results: We obtained 117 responses: 53% neonatologists, 18% pediatricians, and 29% obstetricians, with 62% having more than 10 years of experience. The majority (80%) were familiar with the Portuguese Neonatology Society consensus on the limits of viability and 46% used it in practice; 62% were unaware of Portuguese morbidity-mortality statistics associated with extremely preterm infants. Most (91%) informed parents about morbidity-mortality concerning the gestational age more frequently upon admission (64%) and considered their opinion in the limit of viability situations (95%). At 22 weeks gestational age, 71% proposed only comfort care, while at 25 and 26 weeks, the majority suggested active care (80% and 96%, respectively). Less consensus was observed at 23 and 24 weeks. At 24 weeks, most obstetricians offered active care with the option of comfort care by parental choice (59%), while the neonatology group provided active care (65%), $p < 0.001$. Regarding the lower limit of gestational age for *in utero* transfer, corticosteroid administration, cesarean section for fetal indication, neonatologist presence during delivery, and endotracheal intubation; neonatologists considered a lower gestational age than obstetricians (23 vs 24 weeks; $p = 0.036$; $p < 0.001$; $p < 0.001$; $p = 0.021$; $p < 0.001$, respectively).

Conclusion: Differences in perspectives between obstetricians and neonatologists in limits of viability situations were identified. Neonatologists considered a lower gestational age in various scenarios and proposed active care earlier. Standardized counseling for extremely preterm infants is crucial to avoid ambiguity, parental confusion, and conflicts in perinatal care.

Keywords: Decision Making; Gestational Age; Infant, Premature; Neonatology; Obstetrics; Physicians; Portugal; Surveys and Questionnaires

RESUMO

Introdução: Os avanços em cuidados neonatais têm melhorado o prognóstico na prematuridade extrema. A idade gestacional considerada para tratamento ativo tem diminuído mundialmente. Apesar das normas de orientação clínica implementadas, vários estudos mostram variabilidade de atuação. Pretendemos investigar a perspetiva dos neonatologistas e dos obstetras portugueses sobre a atuação na prematuridade extrema.

Métodos: Questionário *online* divulgado através das Sociedades de Neonatologia e de Obstetrícia e Medicina Materno-Fetal, entre agosto e setembro 2023.

Resultados: Obtivemos 117 respostas: 53% neonatologistas, 18% pediatras e 29% obstetras; 62% com mais de 10 anos de experiência. A maioria (80%) conhecia o consenso do limite da viabilidade da Sociedade Portuguesa de Neonatologia e 46% utilizava-o na prática, 62% referia desconhecer as estatísticas portuguesas de morbimortalidade na prematuridade extrema. A maioria (91%) informava os pais acerca da morbimortalidade para a idade gestacional, mais frequentemente à admissão (64%) e 111 (95%) considerava a sua opinião no limite de viabilidade. Às 22 semanas de idade gestacional, 71% propunham apenas cuidados de conforto e às 25 e 26 semanas, a maioria propunha cuidados intensivos (80% e 96%, respetivamente). Observou-se menos consenso às 23 e 24 semanas. Às 24 semanas, a maioria dos obstetras oferecia cuidados intensivos com possibilidade de cuidados de conforto por opção parental (59%), enquanto os neonatologistas ofereciam cuidados intensivos (65%), $p < 0,001$. Relativamente ao limite inferior de idade gestacional para transferência *in utero*, administração de corticoides, cesariana por indicação fetal, neonatologista na sala de partos e intubação endotraqueal, os neonatologistas tinham em consideração uma idade gestacional inferior à considerada pelos obstetras (23 vs 24 semanas; $p = 0,036$; $p < 0,001$; $p < 0,001$; $p = 0,021$; $p < 0,001$, respetivamente).

Conclusão: Verificámos diferenças na perspetiva de obstetras e neonatologistas em situações de limite de viabilidade. Os neonatologistas consideram uma idade gestacional inferior em vários cenários e propõem cuidados intensivos mais cedo. O aconselhamento na prematuridade extrema deve ser uniformizado para evitar ambiguidade, confusão parental e conflito nos cuidados perinatais.

Palavras-chave: Idade Gestacional; Inquéritos e Questionários; Médicos; Neonatologia; Obstetrícia; Portugal; Recém-Nascido Prematuro; Tomada de Decisão

INTRODUCTION

Infants born before 28 completed weeks of gestation, as defined by the World Health Organization (WHO), are referred to as extremely preterm infants (EPI).¹ Less than 1% of pregnancies end before 28 weeks of gestation.² Despite its low prevalence, extreme prematurity is an important cause of infant mortality and morbidity, being related to future learning, motor, visual and hearing disabilities.^{3,4}

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Recebido/Received: 10/03/2024 - **Aceite/Accepted:** 18/06/2024 - **Publicado Online/Published Online:** 26/07/2024

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Advancements in neonatal care have demonstrated improvements in the prognosis of EPI. In fact, the gestational age (GA) considered for active treatment has been decreasing globally.^{5,6} Nevertheless, a 'grey zone', where the limits of viability are questionable, still remains.⁷ The literature suggests that the likelihood of survival without sequelae for newborn with a GA below 23 weeks and birthweight below 500 g is highly unlikely.^{8,9} On the other hand, preterm infants born after 25 weeks with a birthweight exceeding 600 g have a survival rate over 60%, with at least half avoiding severe long-term deficits.^{4,9} The group of newborn born between 23+0 and 24+6 weeks with a birthweight between 500 g and 600 g constitutes the 'grey zone' of viability.⁷ In these cases, meticulous consideration of additional risk factors, as well as parental opinion, should be considered. Moreover, when treatment is started, ongoing assessment of its impact both in the delivery room as well as in the Neonatal Intensive Care Unit (NICU) is essential.⁷

The difficulty in predicting the short and long-term prognosis of these newborns raises ethical questions about the best course of action.⁸ In addition, the need for rapid decision-making in these scenarios poses an additional challenge for healthcare professionals.¹⁰

Despite the implementation of local guidelines, various international studies have shown significant variability in the approach to EPI among healthcare professionals, both at an individual and professional group level.¹¹⁻¹³ This discordance causes ambiguity and parental confusion and can, in extreme cases, lead to conflicts in perinatal care.¹⁴

Our study aims to investigate medical perspectives regarding treatment options in cases of extreme prematurity and to explore potential differences between Portuguese neonatologists and obstetricians.

METHODS

Study design and ethical approval

We conducted a cross-sectional multicenter study, using an online anonymous questionnaire. The study was approved by the ethics committee of Centro Hospitalar de São João.

Setting and study population

We developed an online questionnaire which was disseminated via email through Google Forms. The e-mails were sent through the Portuguese Neonatology Society (SPN) and the Portuguese Society of Obstetrics and Maternal-Fetal Medicine (SPOMMF) to their society members (n = 354 and n = 200, respectively), from August to September 2023.

The study population included specialists or residents in the fields of obstetrics or pediatrics, and neonatologists.

Participation was voluntary and each participant could only complete the survey once. Two e-mail reminders were sent to SPN members while SPOMMF members received a single reminder.

Survey design

Our survey comprised multiple-choice questions, developed based on the international literature concerning prenatal counseling, previous study surveys, and the 2014 Portuguese consensus on the limits of viability. The conceptual questionnaire was assessed by perinatal experts and subsequently pilot-tested by three neonatologists and one obstetrician for clarity and content.

The initial questions gathered participants' demographic information, including their field of expertise (obstetrics, neonatology, or pediatrics), age, sex, current practice status (yes/no), years of professional experience, geographical area of practice, and NICU level. Additionally, we assessed participants' knowledge of the current national consensus,⁷ as well as their familiarity with their own hospitals' guidelines. We also evaluated their insight on national and local statistics of extreme prematurity, based on the up-to-date national very low birthweight registry (accessed in May 2023), and assessed factors considered to influence the prognosis of these infants (birthweight; sex; congenital anomalies, *in utero* growth restriction, multiple pregnancy, intra-uterine infection, signs of fetal distress, prenatal corticosteroids). Furthermore, our questionnaire included a section on parental involvement and counseling.

As we were particularly interested in understanding physicians' perspectives on treatment decisions, we evaluated which type of treatment (comfort treatment; active treatment; comfort with the possibility of active treatment by parents' choice; active treatment with the possibility of comfort treatment by parents' choice) participants would offer at a given GA. In addition, we presented different scenarios of perinatal management and treatment (*in utero* transfer in the absence of maternal indication; corticosteroid treatment for fetal maturation; c-section for fetal indication; presence of a neonatologist/pediatrician in the delivery room; endotracheal intubation; thoracic compressions and adrenaline administration for resuscitation) where participants would have to select the lowest GA for each of them.

Appendix 1 (Appendix 1: <https://www.actamedicaportuguesa.com/revista/index.php/amp/article/view/21473/15480>)

includes the final version of the implemented survey translated to English.

Data analysis

Statistical analysis was carried out using IBM SPSS, version 29.0 (IBM Corp., Armonk, New York, USA). Categorical variables were expressed in frequencies and percentages and compared using the χ^2 and Fisher's test. Continuous variables were expressed as median and range and compared using the Mann-Whitney test. In case of survey questions 31 to 37, we converted the discrete variables in the multiple-choice question to a continuous variable to facilitate the statistical analysis (e.g., 22+0 - 22+6 weeks of GA was converted to 22 weeks of GA). A p value < 0.05 was considered statistically significant.

RESULTS

We collected a total of 117 responses (neonatologists $n = 62$; pediatricians $n = 21$ and obstetricians $n = 34$), resulting in a global response rate of 22% (23% SPN and 17% SPOMMF). Participant characteristics are detailed in Table 1. Of the respondents, 15% were male. The overall median age was 43 years (28 - 72), with a higher median age observed in the neonatologists/pediatricians (NN/P) group compared to obstetricians [46 (28 - 72) vs 39 (28 - 63), $p = 0.003$]. In total, 97% were currently practicing and 62% had more than 10 years of experience. Regarding the geographical area of practice, 55% of participants worked in the north of Portugal. Furthermore, 80% of participants were affiliated with a level III ICU - 41 at level IIIa and 53 at level IIIb. Additionally, 63% of participants reported involvement in situations of limits of viability one to 10 times a year.

Limits of viability consensus, statistics and prognostic factors

Ninety-three participants (80%) responded that they were familiar with the 2014 SPN consensus on the limits of viability, with a significantly higher percentage in the NN/P group compared to obstetricians (98% vs 35%, $p < 0.001$, respectively). Of these, 46% reported always using it in clinical practice – 50% of NN/P and 17% of obstetricians, with a statistically significant difference between both groups ($p = 0.041$). When asked about the definition of limits of viability, 68% responded that it was defined by “Gestational age, well determined by early ultrasound, from which $\geq 50\%$ of newborn have a chance of survival, and at least 50% of survivors are without severe long-term sequelae”; 26% answered “Gestational age or birthweight from which $\geq 50\%$ of newborn have a chance of survival, and at least 50% of survivors are without severe long-term sequelae” and 7% responded that they did not know, with no differences between groups ($p = 0.713$). Furthermore, 34% participants had their own hospital protocol on the limits of viability.

Regarding the knowledge on national and local statistics: 38% responded that they were aware of national statistics regarding survival at 22 - 26 GA (41% NN/P vs 32% obstetricians, $p = 0.256$) and 60% were aware of their local hospital's statistics with a higher percentage in the NN/P group (70% NN/P vs 35% obstetricians, $p < 0.001$). In Appendix 2 (Appendix 2: <https://www.actamedicaportuguesa.com/revista/index.php/amp/article/view/21473/15481>) we show the participants' answers regarding each GA's national survival statistics. Globally, 33% of answers were in accordance with the national very low birthweight registry. The higher percentage of correct answers were at < 23 weeks of GA (56% - 57% NN/P and 53% obstetricians) and 25 weeks of GA (42% - 43% NN/P and 38% obstetricians). There were no statistically significant differences between groups ($p = 0.336$ for statistics regarding < 23 weeks of GA; $p = 0.279$ for 23 weeks of GA; $p = 0.233$ for 24 weeks of GA and $p = 0.510$ for 25 weeks of GA).

Regarding factors influencing prognosis at the limits of viability (Fig. 1), the most answered were congenital anomalies ($n = 111$, 95%) and the least answered was gender ($n = 79$, 68%). There were no statistically significant differences between groups.

Parental involvement

Ninety-seven percent of participants responded they usually inform parents about the morbimortality for GA, with no statistically significant differences between groups (96% NN/P vs 97% obstetricians, $p = 0.669$). Of these, the majority provided information at admission (64%), 30% at the time of complications, 5% at the time of imminent delivery and 1% when asked for, with no differences between groups ($p = 0.151$). A minority (8%) provided parents with written information (8% NN/P vs 6% obstetricians, $p = 0.480$). 91% agreed that information should be provided by both neonatologists and obstetricians, 6% considered it should be provided by neonatologists and 3% by obstetricians, with no differences between groups ($p = 0.988$). The majority (95%) agreed that parents' opinions should be considered when deciding the approach in situations at the limits of viability, with no statistically significant differences between groups (93% NN/P vs 100%

obstetricians, $p = 0.121$).

Different gestational age scenarios

Fig. 2 represents what participants recommended for newborn care in case of an imminent delivery. At 22+0 - 22+6 weeks of GA the majority (71%) of participants agreed on offering comfort care with no indication for active care and at 26+0 - 26+6 weeks of GA, the majority (96%) agreed on offering active care, with no statistically significant differences between groups ($p = 0.594$ and $p = 0.166$, respectively). At 23+0 - 23+6 weeks of GA, there were no differences between groups ($p = 0.290$), the option of comfort care with the possibility of intensive care by parental choice was the most chosen by both NN/P and obstetricians (48% and 53%, respectively); 24% of obstetricians believed that only comfort care should be offered and 28% of NN/P answered that they would offer active care with the possibility of comfort care by parental choice. At 24+0 - 24+6 weeks of GA, there was a difference between both groups – the majority of NN/P would offer active care while most obstetricians would offer active care with possibility of comfort care by parental choice (65% vs 59%, $p < 0.001$, respectively). At 25+0 - 25+6 weeks of GA, 89% of NN/P would offer active care while in the obstetricians' group, 59% would offer active care and 32% would offer active care with possibility of comfort care by parental choice ($p = 0.004$).

Regarding the median lower GA considered appropriate for each clinical scenario (in case of an *in utero* transfer to a specialized perinatal support hospital in the absence of maternal indication; administration of corticosteroids for fetal maturation; presence of a neonatologist/pediatrician in the delivery room; endotracheal intubation in the context of neonatal resuscitation at birth) NN/P considered the lower limit to be 23 weeks, while obstetricians considered it to be 24 weeks of GA ($p = 0.036$, $p < 0.001$, $p = 0.021$, and $p < 0.001$, respectively). In case of cesarean section due to fetal indication, NN/P considered the lower limit to be 24 weeks while obstetricians considered it to be 25 weeks of GA ($p < 0.001$). Both groups agreed that the lowest GA for starting chest compressions and administering adrenaline in the context of neonatal resuscitation at birth was 24 weeks ($p = 0.483$ and $p = 0.070$).

Limits of viability threshold revision

The majority (59%) of participants considered that, given recent technological developments, it is necessary to review the GA currently considered in Portugal as the viability threshold, with no differences between groups (60% NN/P vs 56% obstetricians, $p = 0.408$).

DISCUSSION

Our article and the obtained results reflect the complexity of decision-making in cases of birth at the limits of viability and how this is conveyed in different attitudes and points of view between neonatologists/pediatricians and obstetricians. We highlight three key points from our results: 1) neonatologists and pediatricians seemed to be more aware of the 2014 Portuguese consensus on the limits of viability; 2) the majority of participants agreed that parental information on the limits of viability should be provided jointly by obstetricians and neonatologists; and 3) there seems to be a discrepancy in attitudes between the two groups, with neonatologists and pediatricians advocating for earlier and more intensive care for newborns.

Firstly, our results showed that neonatologists and pediatricians appeared to have a greater awareness of the national consensus regarding the limits of viability and were more inclined to consistently apply it in their everyday practice. Furthermore, only a minority of participants were familiar with Portuguese statistics concerning the survival of newborns at the limits of viability. Although the percentage was higher when asked about their local hospital statistics, it still fell short of optimal (60%), and once again, the percentage was higher among neonatologists and pediatricians. The heterogeneity in consensus awareness and its application among different healthcare specialists raises concerns. In addition, decision-making should be based not only on broad international consensus and guidelines, but also on national contexts. This includes taking into account updated national and local survival statistics, which are crucial in defining the limits of viability.⁷ Interestingly, we found that a third of participants reported having local hospital guidelines on this topic, which may be a way of standardizing local practice and adapting it to local circumstances. Studies have shown that healthcare professionals' decisions on interventions for extremely premature newborn and perception of prognosis heavily depend on their knowledge and beliefs.^{15,16} Therefore, it is crucial to improve awareness of guidelines and of national, regional, and local survival statistics in order to standardize knowledge and avoid bias. Addressing the lack of recent national publications on morbimortality among EPI presents an opportunity to tackle this issue. Furthermore, simplifying the access to the very low birth registry could facilitate the awareness of national statistics. At a local level, it is essential to conduct internal audits of medical departments to objectively assess their performance and identify key factors related to long-term neonatal

outcomes, in order to develop tailored recommendations and ensure standardized interventions.

Secondly, the majority of participants from both groups informed parents about morbimortality for GA, and most of them agreed that parents' opinions should be considered when deciding the approach in situations at the limits of viability. This reflects a trend towards increasing parental involvement in end-of-life decisions which has also been reported in other countries.^{14,17-19} Different studies and guidelines have proposed that health care professionals and parents share decision-making, aiming for a collaborative decision.²⁰⁻²² In fact, the decision-making process for neonates in the scenario of extreme prematurity transcends the realm of medical expertise alone, as we are considering a vulnerable infant who will possibly face life with potential heavy handicaps or death in the end of palliative/comfort care.²³ In order to make an ethical decision, parental values must also be taken into account, giving meaning to the prognosis.²⁴ Fortunately, our results show that Portuguese health care professionals are sensitive to this issue. Furthermore, the majority of participants agreed that information should be provided jointly by neonatologists/pediatricians and obstetricians, emphasizing the importance of teamwork in this context. On the other hand, we found that only a minority of participants provided written information to parents. Several guidelines advocate the use of written material, allowing parents to revisit the provided information as they may forget or be unable to understand what they were told at the time.^{21,25,26} Additional efforts to bridge this gap should be made to promote transparency and guarantee informed decisions in the challenging context of neonatal care.

Thirdly, and in contrast with the identified need to provide joint information to parents, we identified variations in treatment choices for different gestational ages at the limits of viability between neonatologists and pediatricians *versus* obstetricians. Our findings are in line with the growing body of literature that describes different interventions and attitudes in this complex scenario of extreme prematurity between obstetric and neonatal healthcare professionals.^{11-13,27,28} When considering different GA scenarios, the most important difference was found at 24 weeks. Given that this GA is considered to be in the grey zone, a difference in attitudes could be expected. Nevertheless, we also found differences at 25 weeks, which are not in the grey zone.^{4,9} As in previous studies,^{13,28} our results showed a tendency towards a more conservative approach in the group of obstetricians. At 25 weeks of GA, they still tended to offer the possibility of comfort care and also tended to delay treatment, such as the administration of corticosteroids for fetal maturation, for higher GA, possibly because the consequences of these interventions are less visible to obstetricians than to neonatologists, as the latter are the ones who manage the newborn in intensive care and are more aware of their short and, especially, long term prognosis. In contrast, neonatologists and pediatricians seemed to intervene earlier and provide more intensive care, possibly reflecting the integration of successful technological medical advances into the intensive care of extremely preterm infants.^{11,29}

It should also be noted that at 22 weeks of GA, although the majority agreed that comfort care should be offered, there was still a non-negligible percentage of participants in both groups who would offer active treatment by parental choice, which may be a reflection of the healthcare professionals' perception that technology is evolving in neonatal care units and that other centers around the world, for example in Japan, have recently reported a better prognosis in this low GA age.³⁰

As stated before, obstetricians and neonatologists should work as a team in informing parents and providing neonatal care. This variety and disagreement can lead to unwanted inconsistent practices causing potential conflicts in perinatal care and parental confusion. Consequently, these communication issues and lack of clear information may affect the shared decision-making process, ultimately impacting the newborn's prognosis. The presence of national and international guidelines appears to be a means of standardizing practices.¹² Considering that the majority of our participants expressed a need to reassess the current viability threshold consensus, this could be seen as an opportunity to engage both groups of healthcare professionals in updating national guidelines and standardizing practices. It is essential to encourage more regular and formal collaborations between neonatologists and obstetricians in discussing clinical cases and developing recommendations together. The involvement of both groups has the potential to ensure that the recommended guidelines are accepted by all those involved in the fetal survival scenario.

This study has its limitations: although we contacted all members of the SPN and SPOMMF, we still did not reach half of the target population and the results may be constrained by our sample size. Future strategies to improve response rates could include the use of shorter questionnaires focused on specific questions, a more personalized approach to the target population, and additional methods of dissemination such as publicizing the survey through department meetings. On the other hand, our results may have been influenced by the difference in the median age of each group. Future studies targeting specific age groups could provide a more detailed understanding and complement our findings. Given our study design, there is the possibility of response bias, as participants may have adjusted their answers due to the awareness of being part of a study. Furthermore, the fact that our questionnaire relied on multiple-choice answers may limit the depth of the participants' responses. A qualitative study with focus groups could be of value to supplement our findings. Nevertheless, we were able to conduct a national-level survey with responses from all of Portugal's areas of practice which enhanced our

understanding of the Portuguese reality. The inclusion of questions directly related to our national consensus and statistics enhances its relevance for daily practice.

CONCLUSION

Differences in perspectives between obstetricians and neonatologists in limited viability situations were identified. Neonatologists considered a lower gestational age in various scenarios and proposed active care earlier.

Standardizing counseling in perinatal ethics is essential to prevent ambiguity, parental confusion, and conflicts in perinatal care. A collaborative and multidisciplinary approach is crucial to ensuring that guidelines and practices align with evidence and meet the diverse needs of extremely preterm infants.

LEARNING POINTS

- Neonatologists and pediatricians seemed to be more aware of the consensus on the limits of viability when compared to obstetricians.
- The majority included and informed parents about morbidity and mortality associated with extreme prematurity.
- The majority agreed that information on the limits of viability should be provided jointly by obstetricians and neonatologists.
- There seems to be a discrepancy in attitudes with neonatologists and pediatricians advocating for earlier and more active care for newborns.
- The majority agreed that the national consensus should be reassessed, which comes as an opportunity to create multidisciplinary teams to update national guidelines and standardize practice.

ACKNOWLEDGEMENTS

We would like to express our gratitude to the Sociedade Portuguesa de Neonatologia for their invaluable support in disseminating the questionnaires and providing access to national statistical data. Additionally, our sincere appreciation goes to the Sociedade Portuguesa de Obstetrícia e Medicina Materno-Fetal for their assistance in promoting the distribution of the questionnaires. Their collaboration and contributions have greatly enriched the research process and strengthened the foundation of this study.

PREVIOUS AWARDS AND PRESENTATIONS

This paper was presented as an oral communication at the 51st National Neonatology Congress held in Tomar, in November 2023.

AUTHOR CONTRIBUTIONS

IPC: Study design, literature search, writing and critical review of the manuscript.

SP, HS: Critical review of the manuscript

SC: Study design and supervision, literature search, critical review of the manuscript.

All authors approved the final version to be published.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in 2013.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

FUNDING SOURCES

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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Table 1 – Participants' characteristics

	Total (n = 117)	Neonatologists/pediatricians (n = 83)	Obstetricians (n = 34)	p-value
Male participants, n (%)	17 (15%)	12 (15%)	5 (15%)	0.589
Median age, (min. - max.)	43 (28 - 72)	46 (28 - 72)	39 (28 - 63)	0.003
Currently practicing, n (%)	114 (97%)	80 (96%)	34 (100%)	-
Years of professional experience				
< 5	22 (19%)	17 (20.5%)	5 (15%)	0.468
5 - 10	23 (20%)	17 (20.5%)	6 (51%)	0.726
> 10	72 (62%)	49 (59.0%)	23 (68%)	0.385
Geographical area				
North	64 (55%)	46 (55%)	18 (53%)	0.807
Center	19 (16%)	12 (14%)	7 (21%)	0.414
South	27 (23%)	21 (25%)	6 (18%)	0.372
Madeira	3 (3%)	2 (2%)	1 (3%)	1.000
Azores	4 (3%)	2 (2%)	2 (6%)	0.579
NICU level				
I	8 (7%)	8 (10%)	0	0.103
II	15 (13%)	8 (10%)	7 (21%)	0.131
IIIa	53 (45%)	41 (49%)	12 (35%)	0.164
IIIb	41 (35%)	26 (31%)	15 (44%)	0.188
How frequently are you involved in situations of limits of viability?				
< 1 x/year	19 (16%)	17 (20%)	2 (6%)	0.205
1 - 10 x/year	74 (63%)	49 (59%)	25 (74%)	0.058
> 10 x/year	19 (16%)	13 (16%)	6 (18%)	0.792
Never	5 (4%)	4 (5%)	1 (3%)	1.000

NICU: neonatal intensive care unit.

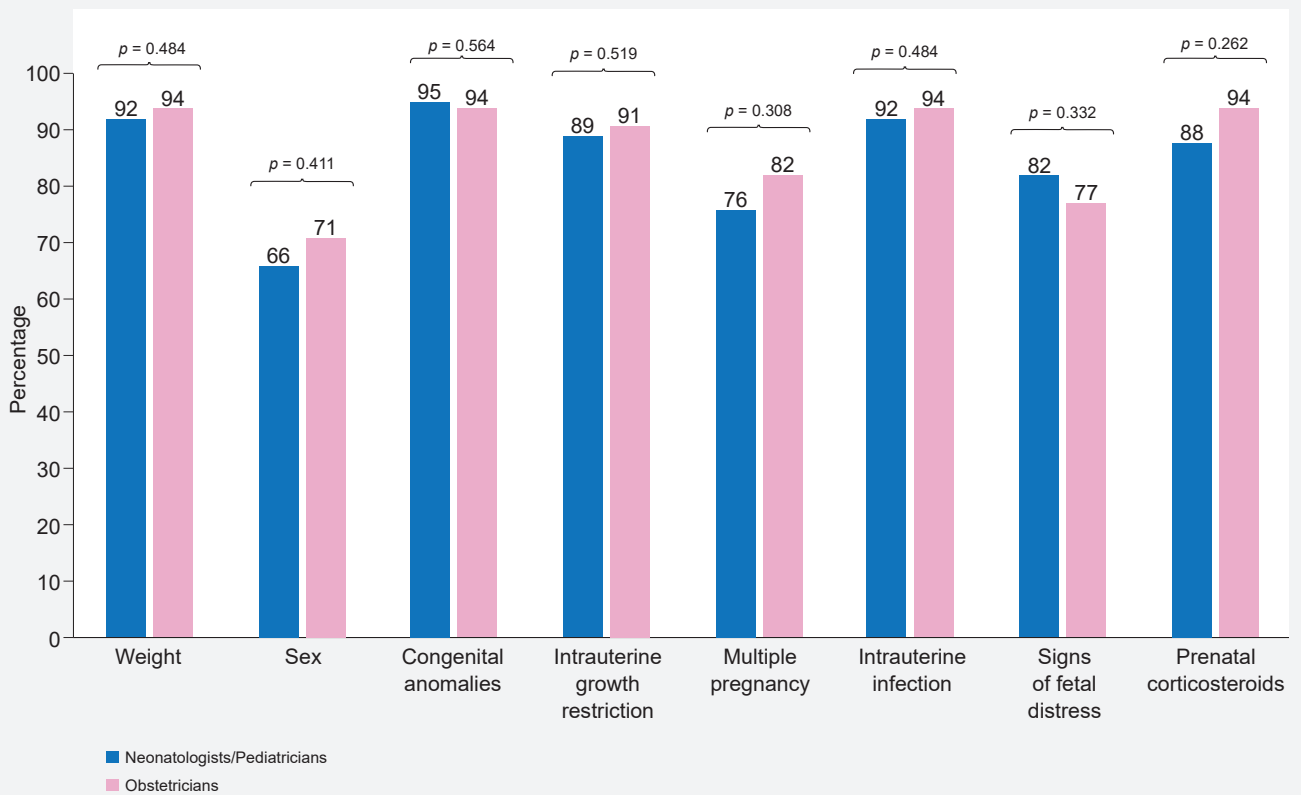


Figure 1 – Prognostic factors for newborn at the limits of viability, n = 117 (% for each group, neonatologists/pediatricians n = 83; obstetricians n = 34)

