

Communication at work: A survey to explore the relationships between healthcare providers' communication competence and professional quality of life in neonatal care

Nanon H.M. Labrie^{a,b,c,*}, Puck Straver^a, Anne A.M.W. van Kempen^b,
Nicole R. van Veenendaal^{b,c}

^a Department of Language, Literature & Communication, Vrije Universiteit Amsterdam, the Netherlands

^b Department of Pediatrics and Neonatology, OLVG, Amsterdam, the Netherlands

^c Amsterdam UMC, University of Amsterdam, Vrije Universiteit, Emma Children's Hospital, Amsterdam, the Netherlands

ARTICLE INFO

Keywords:

Neonatal care
Parent-provider communication
Professional quality of life
Compassion satisfaction
Compassion fatigue
Job satisfaction
Survey research

ABSTRACT

Objective: Providing medical care to preterm infants can be rewarding yet also stressful for healthcare providers in the neonatal care unit (NICU). While the impact of provider-parent communication on parent-related stress and satisfaction is widely accepted, little is known about the provider perspective. Therefore, this study explores the relationships between neonatal care providers' *communicative competence* and their *professional quality of life and job satisfaction*.

Methods: Using the NICU Communication Framework, we conducted a cross-sectional survey among $N = 300$ Dutch pediatricians-neonatologists, nurses, and ancillary staff.

Results: Communication *performance* and providers' job satisfaction were correlated, particularly in terms of perceived quality of care, professional relationships, and personal rewards. When providers deemed communication *important* and perceived themselves as *skilled* communicators, job satisfaction increased. Experiencing sufficient *time* for conversations with parents was inversely correlated with provider fatigue and burn-out. Yet, providers reported insufficient opportunity for communication.

Conclusion: These results warrant reflection on the importance of communication in neonatal care, for the wellbeing of parents and providers alike.

Innovation: Focusing on the provider perspective, this study provides novel insights into the relationships between communication and outcomes of care. Our findings uniquely emphasize the power of communication to foster staff satisfaction and reduce burn-out in the NICU.

1. Introduction

Providing neonatal hospital care can be highly rewarding yet also stressful for healthcare providers [1-5]. The neonatal (intensive) care unit (NICU) is a complex environment that offers highly complex medical care to infants who are born preterm (< 37 weeks of gestation) or ill.

In their work, neonatal care providers may find particular joy in providing care for their fragile patients and witnessing infants' recovery; in building – sometimes long-term – relationships with infants as well as their parents; and in empowering parents to become independent caregivers upon hospital discharge. In the literature, the sense of

fulfillment that healthcare providers can experience when empathizing with patients and their loved ones is referred to as *compassion satisfaction* [6-8].

At the same time, caring for preterm and critically ill neonates can be challenging. Healthcare providers – medical doctors as well as nursing and ancillary staff – require highly advanced medical training to work in the NICU. As Braithwaite [1] states, the “complex technological equipment, constant noise levels from the many alarms, and the precise attention to detail can raise the stress levels in [even] the most hardy NICU nurses”. More so, being faced with serious illness and infant death is inevitable when working in the NICU. As a result, the close

* Corresponding author at: Department of Language, Literature & Communication, Vrije Universiteit Amsterdam, De Boelelaan 1105, 1081 HV Amsterdam, the Netherlands.

E-mail address: n.h.m.labrie@vu.nl (N.H.M. Labrie).

<https://doi.org/10.1016/j.pecinn.2024.100341>

Received 31 December 2023; Received in revised form 19 August 2024; Accepted 31 August 2024

Available online 10 September 2024

2772-6282/© 2024 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC license (<http://creativecommons.org/licenses/by-nc/4.0/>).

involvement with preterm infants and their parents can cause secondary traumatic stress in healthcare providers. The physical, emotional, and psychological impact of providing medical care is referred to as *compassion fatigue*, causing burn-out-like symptoms [2,7,8].

Healthcare providers' overall *professional quality of life* is argued to be a composite of their levels of compassion satisfaction, compassion fatigue, and burn-out [9]. Healthcare providers' general *job satisfaction* more broadly relates to contentment with different features of clinical work, including patient care, interprofessional relationships, work load and perceived personal and financial rewards [10]. While compassion satisfaction and job satisfaction are both inversely related with burn-out, compassion fatigue is strongly positively associated with provider burn-out [8].

The extensive communicative interactions healthcare providers have with parents of preterm infants could contribute to healthcare providers' professional quality of life and job satisfaction. In a series of studies, we argued that healthcare provider-parent communication in the NICU consists of four main functions: (1) *building and maintaining relationships*, (2) *exchanging information*, (3) *(sharing) decision-making* between healthcare providers and parents, and (4) *encouraging parent self-management*, referring to parents' participation in care activities during hospitalization and their ability to independently care for the infant upon discharge [11]. We showed that, across each of these functions, the communicative interaction between healthcare providers and parents impacts both short- (during hospitalization) and long-term (even years after discharge) parent-related outcomes of neonatal care, including parental *coping* and *stress*, parents' *medical knowledge*, their *participation* in care and communication, parent-infant *attachment*, and parents' *satisfaction* with individual healthcare providers and care. Together, we captured the functions, characteristics, and effects of healthcare provider-parent communication in the NICU Communication Framework and argued that communication is central to Family-Integrated Care (FiCare) (for an overview of the NICU Communication Framework, see Fig. 1 and [11-13]).

Yet, while there is ample evidence to support the impact of healthcare provider-parent communication on parent-related outcomes, there is little research focused on the healthcare provider perspective. Nonetheless, it can be assumed that when healthcare providers *perform* well across the different functions of NICU communication and *perceive* themselves as skilled and able to interact with parents (*communication competence*), this could be positively associated with healthcare providers' professional quality of life (and more specifically, compassion satisfaction) and job satisfaction. Similarly, when communication with parents is hampered, it is conceivable that this causes stress and fatigue in healthcare providers. Yet, it is also thinkable that experiencing severe stress at work can impact communication with parents negatively, while being 'happy' at work can enhance one's ability to communicate effectively with parents.

Therefore, starting from the NICU Communication Framework [11-13], this study aimed to answer the question whether there is a two-way relationship between neonatal care providers' communicative competence (self-reported performance and perceptions) in interactions with parents of preterm infants during infant hospitalization and their professional quality of life and job satisfaction.

2. Methods

2.1. Design

We conducted a cross-sectional survey among healthcare providers working in NICUs across the Netherlands. Our research team included health communication experts, medical doctors in pediatric-neonatal medicine, epidemiologists, and a parent of a preterm infant. The study was part of the IMPACT project, funded by the Dutch Research Council to the first author (NWO, VI.Veni.191S.032). The funding body was not involved in the study design, data collection or analysis thereof. The Science and Ethics Committee of the Vrije Universiteit Amsterdam (VSWE-2019132) approved the project protocol. The Medical Ethical Committee of the Amsterdam UMC, location VUmc judged that the study was not subject to the Medical Research Involving Human Subjects Act (2019.596). The study is reported in accordance with the Checklist for Reporting Of Survey Studies (CROSS) [14].

2.2. Sample

We recruited a convenience sample of Dutch neonatal healthcare providers, including but not limited to pediatrician-neonatologists (in training), neonatal nurses, nurse practitioners, physician assistants, physiotherapists, lactation specialists, speech therapists, (medical) psychologists, social workers, and midwives. Healthcare providers were eligible for participation if they worked in a neonatal intensive care unit, a medium/high care unit, or maternity ward (NICU levels 1-4, [15]). We recruited healthcare providers via the neonatal division of the Dutch Association of Pediatrics (NVK), the neonatal division of the Dutch professional organization for nurses and nurse specialists (V&VN VS), a Dutch parent and patient support organization in neonatal care (Care4Neo), the newsletter of the Dutch Ronald McDonald House Charities, and our own networks. We did not determine our sample size a priori.

2.3. Procedures

We designed the survey in Qualtrics version 2021 (Qualtrics, Provo, UT) and pretested it with four participants (a physician, a nurse, a mother and a father of preterm infants). As a result, we made minor adjustments in the wording of the survey. We kept the survey open for

NICU COMMUNICATION FRAMEWORK

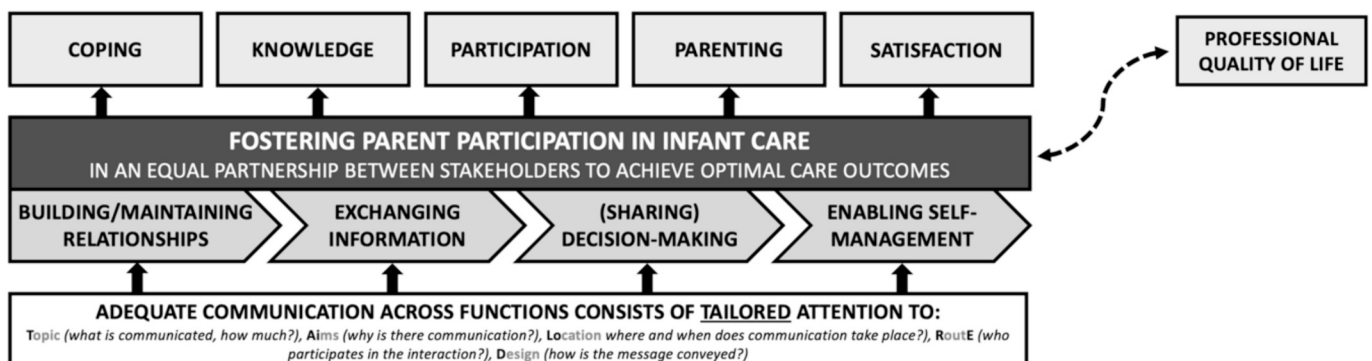


Fig. 1. The NICU Communication Framework, based on Labrie et al. [11-13].

participation over the course of three weeks in April 2021. At the start of the survey, we explained the study aims to the participants and informed them that participation was anonymous, would take approximately 15 min, and that results would be used for research purposes. We did not provide an incentive for participation. Participants explicitly provided informed consent before entering the survey.

2.4. Measurements

Where possible we used existing, validated scales in the survey to measure different concepts. Scales that were not available in Dutch, were translated by NL and PS using a back translation technique. See [Table 1](#) for all measurement instruments and their characteristics. The survey (in Dutch) is available upon request.

To assess participants' **communication competence**, we instructed participants to think of their most recent conversation with parents in which they discussed a treatment plan. Participants completed measurement instruments for each of the four functions of the NICU Communication Framework [11-13], reporting on their **performance** during this particular conversation [16-19]. In addition, we assessed participants' **perceptions** (*importance, skills, time and space*) of their own communication competence, for each function of the NICU Communication Framework. We used existing scales to measure healthcare providers' **professional quality of life** and **job satisfaction** [20,21]. Because of restrictions in most neonatal units due to the Covid-19 crisis during the data collection phase, we also included several questions to assess the perceived effect of the pandemic on healthcare providers' conversations with parents; their compassion with parents, job satisfaction, and work-related stress.

2.5. Analyses

We analyzed the data using SPSS version 28. We considered data imputation to account for missing data, as 34.7 % of participants did not complete the survey (drop-out following socio-demographics but before the last question). We performed independent *t*-tests and chi square tests for all demographic variables to assess possible differences between completers versus non-completers. While non-completers were *significantly* younger ($M = 42.1$ vs. 46.8 years, $p = .013$), worked more often in a nursery (63 % of participants within this group quit), and deemed information-provision and decision-making more important than completers ($M = 4.9$ vs. 4.8 , $p = .003$; 4.6 vs. 4.3 , $p = .021$), we deemed these differences *clinically* very small. As such, we decided against imputation.

When variables had a normal distribution, we computed means, standard deviations, and range. When the distribution was asymmetrical (skewness and kurtosis beyond -2 and $+2$), we calculated medians and interquartile range (IQR). We used Cronbach's alpha to determine the internal consistency of the included measurement scales. We first assessed Pearson's correlations between communication functions to assess to which extent functions concerned independent constructs. We considered correlations above 0.8 *very strong*, between 0.5 and 0.79 *strong*, between 0.3 and 0.49 *moderate*, and below 0.29 *weak* [22]. Second, we measured the strength of the relationships between participants' performance on each of the communication functions and variables associated with professional quality of life and job satisfaction. Correlations were assessed rather than associations (e.g., multiple linear regression) because of the exploratory nature of the present study. We were primarily interested in assessing the strength and direction (positive or negative) of correlations between variables, rather than determining cause and effect [22]. Moreover, the relationships between communication competence and professional quality of life and job satisfaction were conceptually assumed to be bidirectional rather than unidirectional, with both constructs affecting each other.

3. Results

3.1. Demographics

$N = 300$ Dutch healthcare providers working in neonatal care took part the survey (71.7 % nurses, 15 % medical doctors). Most participants were female (93.3 %). They were on average 45.2 years old ($SD = 11.9$). Participants were highly educated, with 79.6 % receiving a higher vocational or university degree. The vast majority of participants completed their medical education in the Netherlands. Approximately half of participants worked in a level 3-4 NICU. Participants had an average work experience of 15.8 years ($SD = 11.3$) and worked on average 28.4 h per week ($SD = 8.8$). Most participants had a permanent work contract. See [Table 2](#).

3.2. Descriptive statistics

All scales used to assess participants' communication competence (self-reported performance) showed good overall internal consistency (Cronbach's alpha STAR-C: 0.87; SE-12: 0.88; SDM-Q: 0.89; EPS: 0.84). For both professional quality of life and job satisfaction all subscales showed adequate to good internal consistency (Cronbach's alpha Pro-QOL: *compassion fatigue*: 0.70, *burn-out*: 0.74, and *compassion satisfaction*: 0.79; job satisfaction: *patient care*: 0.67; *burden*: 0.77; *income prestige*: 0.53; *personal rewards*: 0.69).

Participants scored moderately high on (self-reported) communication *performance* during their last treatment conversation with parents: building and maintaining relationships, exchanging information, sharing decision-making, and enabling parent self-management (see [Table 3](#)). Noticeably, participants scored particularly high on the latter communication function. When asked about their *perceptions* for each of the communication functions, participants deemed all functions highly important and scored their own communication skills as quite high. However, across functions, they indicated to have only moderately enough time and space in their work to communicate with parents. Participants perceived the COVID-19 crisis to have a low-medium impact on their interactions with parents.

Participants scored highly on *compassion satisfaction*, the extent to which they feel satisfied empathizing with parents of preterm infants (see [Table 4](#)). Participants in our sample scored low on *compassion fatigue* and *burn-out*. On average, participants scored high on job satisfaction, overall and specifically in terms of the perceived quality of care provided to patients, the extent to which they experience intellectual stimulation and enjoyment at work (*personal rewards*), and the quality of their relationships with colleagues. Scores were somewhat lower in terms of participants' satisfaction with perceived work-related burden and the perceived prestige of their income. Overall, participants perceived the COVID-19 crisis to have a low-medium impact on their job satisfaction and professional quality of life.

3.3. Relationships between healthcare providers' communication competence (performance and perceptions) and professional quality of life

Performance across the four communication functions was weakly to moderately correlated. Exchanging information and sharing decisions were strongly related, while there was no significant relationship between sharing decisions and enabling parent self-management, with the exception of the subscale focused on encouraging participation (See [Table 5a](#)).

[Table 5b](#) shows the relationships between participants' self-reported communication performance across communication functions and their professional quality of life and job satisfaction. There was a weak yet significant relationship between *performance on building and maintaining relationships* during a conversation with parents and healthcare providers' compassion satisfaction and job satisfaction, particularly in terms of the perceived quality of their patient care, their professional

Table 1
Measurement: instruments and key characteristics.

Concept(s)	Definition	Instrument(s)	Measurement	Subscales	Cronbach's Alpha (reported)	Alterations	Score computation
Communication competence: performance <i>Building and maintaining relationships</i>	Responding to parents' emotions, fulfilling their supportive needs, and helping parents to manage uncertainties in their infant's care.	STAR-C [16]	12 items, 5-point Likert scale (strongly disagree to strongly agree)	(1) <i>positive collaboration</i> , measuring the extent to which healthcare providers experience a shared understanding of goals, mutual openness, and trust with parents; (2) <i>emotional difficulties</i> , assessing issues that may arise between healthcare providers and parents; and (3) <i>positive healthcare provider</i> , measuring the extent to which the healthcare provider encourages, supports, listens and understands parents.	Subscales: (1) 0.94, (2) 0.88, (3) 0.73	Added two items to encompass all aspects of <i>building and maintaining relationships</i> . These items referred to the extent to which healthcare providers had provided emotional support to parents and had helped parents cope with uncertainty (<i>emotional support</i>).	We obtained total scores by inverse coding the items of the second STAR-C subscale and creating a sum score of all 14 items (scoring range: 0–56).
<i>Exchanging information</i>	A continuous sharing of knowledge between parents and providers throughout infants' admission.	SE-12 [17]	12 items, 10-point slider scale (very uncertain to very certain)		0.95	Five items were excluded. Excluded items focused on (non-verbal) empathic communication, agenda setting, and shared decision-making and were covered by the other scales. These items also did not fit the conceptualization of exchanging information in the NICU Communication Framework.	We calculated a total score by taking the sum of all items. Resulting in a scoring range from 0 to 70.
(Shared) <i>decision making</i>	Throughout hospitalization, parents and providers continuously have to make decisions about treatment. Depending on parents' preferences as well as medical circumstances over the course of admission, decisions are made by providers, parents, or jointly.	SDM-Q-Doc [18]	9-item, 6-point Likert scale (completely disagree to completely agree, including the option to tick "not applicable").		0.88		Per original instructions, we calculated a total score by taking the sum of all items, times twenty, divided by 9 (maximum score: 100)
<i>Enabling parent self-management</i>	Supporting parents' participation in care activities during hospitalization and their ability to independently care for the infant upon discharge	Inspired by the Nurse Parent Support tool [19]	9 items, 5-point Likert scale (completely disagree to completely agree)	Three sub-concepts: (1) <i>parent education</i> , referring to the extent healthcare providers actively seek to teach parents new knowledge and skills; (2) <i>positive feedback</i> , measuring healthcare providers' propensity to offer <i>positive</i> encouragement to parents; and (3) <i>encouraging participation in infant care</i> , assessing healthcare providers' tendency to actively involve parents in care activities and decision-making.			A total score was calculated by taking the sum of all items (maximum score: 45).
Communication competence: perceptions For each <i>function</i> :		3 single items	Three overall items (5-point slider)	"How important do you think [<i>specific function</i>] is in conversations with parents?"; "I have enough time and space in my job to [<i>execute specific function</i>] in conversations with parents"; and "on average, I rate			

(continued on next page)

Table 1 (continued)

Concept(s)	Definition	Instrument(s)	Measurement	Subscales	Cronbach's Alpha (reported)	Alterations	Score computation
				my own skills in [specific function] in conversations with parents as..."			
Professional quality of life	The experienced negative and positive effects of helping others who experience suffering and trauma.	Short version of the Professional Quality of Life Questionnaire (ProQOL) [20]	9-item scale consists of three subscales (5-point Likert scale, never to very often)	healthcare providers' <i>compassion satisfaction</i> , <i>compassion fatigue</i> , and <i>burnout</i> [9,16].	Cronbach's alphas of 0.84, 0.82, and 0.83 respectively		We computed total scores by summing items for each subscale. Analogous to the original scale interpretation, we considered scores of 6.5 or below as <i>low</i> ; scores of 6.6 to 12.4 as moderate; and scores of 12.5 and above as high.
Job satisfaction	The level of contentment employees feel with their job	17-item Job Satisfaction questionnaire for physicians [21]	7-point Likert scale (slider: extremely unsatisfied to extremely satisfied)	Five aspects of their professional life: (1) <i>patient care</i> , including autonomy in treating patients and perceived quality of provided care; (2) <i>burden</i> , assessing perceived workload, work stress, time for family, friends and leisure, and the administrative workload associated with working in healthcare; (3) <i>income prestige</i> , referring to financial income and social status; (4) <i>personal rewards</i> , measuring intellectual stimulation, opportunities for further education, and the enjoyment of one's work; and (5) <i>professional relations</i> , assessing the perceived quality of relationships with colleagues.	Each of the five factors has previously shown relatively good internal consistency: 0.76, 0.79, 0.83, 0.71, and 0.66 respectively	Following the pre-test, we dropped one item from the <i>income prestige</i> sub-scale (method of salary payment), because this item was deemed irrelevant to the Dutch context. We combined the two items from the <i>professional relations</i> sub-scale into one item, because of the scope of the present study (all healthcare providers rather than solely nurses).	We obtained total scores by averaging the items per subscale, where higher scores indicate higher satisfaction, lower scores indicate less satisfaction and possibly more work-related stress.
COVID Impact		1 single item	(10-point slider and additional option to elaborate)	Communication, their compassion with parents, job satisfaction, and work-related stress			

5

Table 2
Participant demographics.

	N (=300)	%	Mean	Range	SD
Gender					
Female	280	93.3			
Male	20	6.7			
Other / do not want to say	0	0			
Age	300	100	45.2	22–69	11.9
Highest education degree					
Pre-vocational secondary school	8	2.7			
Pre-professional secondary school	16	5.3			
Pre-academic secondary school	2	0.7			
Vocational training	35	11.7			
Higher vocational degree	168	56.0			
Academic degree	55	18.3			
Doctoral degree	16	5.3			
Medical training					
Netherlands	287	95.7			
Belgium	13	4.3			
Work type					
Care assistant	5	1.7			
Lactation consultant	3	1.0			
Medical psychologist / social worker	8	2.7			
Medical specialist	35	11.7			
Nurse	215	71.7			
Physical therapist	2	0.7			
Physician assistant	4	1.3			
Resident doctor	10	3.3			
Speech therapist	11	3.7			
Other	7	2.3			
Work place					
NICU	157	52.3			
Post-IC / High care	60	20.0			
Medium care	35	11.7			
Nursery	29	9.0			
Neonatology – general	9	3.0			
Combination	12	4.0			
Work experience (years)	300	100	15.8	0–45	11.3
Work hours (per week)	300	100	28.4	0–60	8.8
Work contract (type)					
Permanent contract	269	89.7			
Temporary contract	26	8.7			
Flexible contract	4	1.3			
Other	1	0.3			

relationships, and the extent to which they perceived their work as rewarding. Notably, performance on the subscales related to building positive relations, the ability to handle difficult emotions, and providing encouragement was correlated with increased healthcare provider compassion satisfaction, while there was a weak, inverse relationship between the ability to handle difficult emotions and healthcare provider burn-out. Similarly, performance on *exchanging information* showed weak yet significant correlations with participants' satisfaction with patient care, professional relationships, and personal rewards. Professional quality of life was not correlated with this communication function. Performance on *sharing decision-making* was found to be significantly yet weakly correlated with participants' satisfaction with patient care and their professional relationships. Also here, no relationships were found with healthcare providers' professional quality of life. Noticeably, performance on the communication function *enabling parent self-management* was not significantly related to healthcare providers' professional quality of life or overall job satisfaction. However, performance on the subscale about parent education was weakly, negatively correlated with satisfaction about income and positively with professional relations. Providing positive feedback was weakly related to satisfaction with patient care.

Table 6 shows the relationships between healthcare providers' perceptions of their self-reported execution of the four communication functions during their last conversation about treatment and their

professional quality of life and job satisfaction. Finding communication *important* was associated with higher satisfaction in terms of patient care, perceived personal rewards, and work load. Higher scores on self-perceived communication *skills* were related to higher job satisfaction overall and specifically with patient care. A clear pattern emerged in terms of experiencing sufficient *time and space* for interactions with parents. First, there were consistent, positive relationships across communication functions between having enough time and space for communication and job satisfaction, specifically in terms of the perceived quality of patient care, healthcare providers' work-related burden, the experienced personal rewards, and enjoying positive relationships with colleagues. Satisfaction with income and prestige was less relevant. Second, there were weak yet consistent inverse relationships between experiencing sufficient time and space for interactions and healthcare providers' compassion fatigue and burn-out.

4. Discussion and conclusion

4.1. Discussion

Is there a relationship between healthcare providers' (self-reported) communicative competence during interactions with parents of preterm infants and their professional quality of life and job satisfaction? The present findings suggest that this is indeed the case. However, the answer is more nuanced. Healthcare providers' performance on the different communication functions in the neonatal care unit (cf. NICU Communication Framework, [11-13]: *building/maintaining relationships, exchanging information, sharing decision-making, enabling parent self-management*) is significantly and positively correlated to healthcare providers' compassion satisfaction and job satisfaction, particularly in terms of the perceived quality of their patient care, their professional relationships, and the extent to which they perceive their work as rewarding. When healthcare providers perceive the interactions with parents as important and perceive themselves as skilled communicators across communication functions, their job satisfaction increases. And, when healthcare providers experience sufficient time for conversations with parents, their levels of fatigue and burn-out go down (and vice versa). Despite that the strength of these relationships is weak to moderate, it thus seems that healthcare providers who communicate well with parents, feel more satisfied at work and the other way around. This may very well work as a positive (or negative) spiral, where healthcare providers who are happy at work communicate better and as a result feel more satisfied in their job.

Importantly, in this study, participants consistently report too little time and space for interactions with parents, across all communication functions. While deeming communication highly important, participants feel their hospitals and department do not allow sufficient time for parent-healthcare provider interaction. This is in line with observations in other studies [21,23-25]. Nonetheless, this finding is concerning, as several studies – including the present – show beneficial results of parent-healthcare provider communication, including for parents' coping, knowledge, participation, parenting, and satisfaction and healthcare providers' work-related satisfaction [11].

Noticeably, our participants indicate to experience very little compassion fatigue and burn-out because of their work in the NICU. This is remarkable as the work pressure in the neonatal care unit is known to be high and understaffing is a pervasive and serious problem [26-29]. More so, against our expectations, participants did not report a perceived effect of the COVID-19 crisis on their communication with parents and their professional quality of life. This is notable as several studies have reported a significant impact of the restrictions imposed during the global pandemic on daily work practices in neonatal care units (e.g., restricted access to the unit for parents and visitors, strict hygiene regulations) [30-32]. It seems that our participants are those healthcare providers who continued to work enthusiastically, without signs of fatigue or burn-out, and still found time to complete a survey

Table 3
Communication competence (performance and perceptions).

	N (= 300)	%	Mean	Median	IQR	Range	SD
Building/maintaining relationships							
Performance	241	80.3	44.5			31–56	5.0
Perceived importance	238	79.3	4.6			2.5–5	0.5
Perceived skills	238	79.3	4.2			2.5–5	0.6
Time/space	238	79.3	3.6			1–5	0.9
Exchanging information							
Performance	220	73.3	53.8			28–70	6.3
Perceived importance	230		4.8			3.5–5	0.4
Perceived skills	231	76.7	4.2			2.5–5	0.6
Time/space	230	77.0	3.8			1–5	0.9
		76.7					
Sharing decision-making							
Performance	98*	32.7	71.3			11.1–100	16.8
Perceived importance	214		3.9	4.0	1.0		
Perceived skills	212	71.3	3.6			1–5	0.7
Time/space	212	70.7				1–5	0.8
		70.7					
Enabling parent self-management							
Performance	104*	34.7	41.2			31–45	4.2
Perceived importance	205	68.3	3.9	5.0	0.5	0.5–5	1.1
Perceived skills	205	68.3		4.5	1.0		
Time/space	205	68.3					
COVID impact							
On communication	204	68.0	4.5			1–10	2.6

* Not applicable in all conversations.

Table 4
Professional quality of life.

	N (= 300)	%	Mean	Range	SD
Professional quality of life					
Compassion fatigue	198	66.0	5.7	3–11	1.7
Compassion satisfaction	198	66.0	13.4	9–15	1.4
Burn-out	197	65.7	6.9	3–13	2.0
Job satisfaction					
Burden	198	66.0	4.4	1.5–6.8	1.0
Income prestige	199	66.3	4.8	2–7	1.0
Patient care	199	66.3	5.5	2.8–7	0.7
Personal rewards	199	66.3	5.3	2.3–7	0.9
Professional relations	200	66.7	5.6	4–7	0.8
Overall	200	66.7	5.6	3–7	0.9
COVID impact					
On compassion	197	65.7	4.6	1–10	2.8
On job satisfaction	196	65.3	4.1	1–10	2.6
On work stress	196	65.3	4.3	1–10	2.6

about communication. This points towards a possible bias in our sample and begs the question whether we reached healthcare providers who did suffer from fatigue or stress. Nonetheless, the fact that we found significant relationships between communication competence and professional quality of life within this sample, leads us to believe that these

relationships may even be stronger in a more diverse participant pool.

Another important finding from the present study is the suggestion that the four communication functions distinguished in the NICU Communication Framework, are weakly to moderately correlated, suggesting that the functions are certainly related, but indeed largely independent constructs. While this observation needs to be confirmed in future studies, this is in line with the framework’s sequential conceptualization of the communication functions, where each function builds onto the next (Fig. 1). Notably, the relationship between exchanging information and sharing decision-making is very strong. This seems intuitive as performing well on shared decision-making is truly infeasible without exchanging information first. Participants score particularly high on enabling parent self-management. At the same time, this is the only communication function that is hardly related to professional quality of life and job satisfaction. While no conclusions can be drawn from this, one possible preliminary explanation could be that, despite being a core communication function, enabling parent self-management is a very different form of communication. For, enabling parent self-management could be seen as a form of practical coaching. Possibly, there is more focus on this type of interaction during healthcare provider training. More so, many studies and practical interventions have been directed towards improving parent empowerment and enabling their self-management [11,33,34]. As a result, healthcare providers may have internalized this type of communication more as a standardized

Table 5a
Correlations between communication performance across communication functions.

	1.	1a.	1b.	1c.	1d.	1e.	2.	3.	4.	4a.	4b.	4c.
1. Building/maintaining relationships												
1a. Positive collaboration	NS											
1b. Emotional difficulties	NS	NS										
1c. Positive clinician	NS	NS	NS									
1d. Emotional support	NS	NS	NS	NS								
1e. Uncertainty	NS	NS	NS	NS	NS							
2. Exchanging information	0.39**	0.35**	0.26**	0.29**	0.34**	0.24**						
3. Sharing decision-making	0.35**	0.34**	0.24*	0.26**	NS	NS	0.59**					
4. Enabling parent self-management	0.26**	NS	0.29**	NS	NS	0.32**	0.26**	NS				
4a. Parent education	0.21**	NS	0.23**	0.19*	0.16*	0.31**	NS	NS	NS			
4b. Positive feedback	NS	NS	NS	0.17*	0.18*	0.18*	NS	NS	NS	NS		
4c. Encouraging participation	0.22*	0.20*	0.20*	NS	0.19*	0.21*	0.25**	0.27*	NS	NS	NS	

Table 5b
Correlations between communication performance and professional quality of life and job satisfaction.

5.	Professional quality of life													
5a.	Compassion fatigue	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
5b.	Compassion satisfaction	0.21**	0.17*	0.22**	0.18*	NS	NS	NS	NS	NS	NS	NS	NS	NS
5c.	Burn-out	NS	NS	-0.14*	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
6.	Job satisfaction	0.19*	0.18*	0.23**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
6a.	Patient care	0.24**	0.23**	0.19**	0.18*	0.16*	NS	0.29**	0.23*	NS	NS	NS	0.20**	NS
6b.	Burden	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
6c.	Income prestige	NS	0.14*	NS	NS	NS	-0.16*	NS	NS	NS	NS	-0.17*	NS	NS
6d.	Personal rewards	0.17*	NS	0.26**	NS	NS	NS	0.18*	NS	NS	NS	NS	NS	NS
6e.	Professional relations	0.21**	0.14*	0.25**	NS	NS	NS	0.21**	0.21*	NS	NS	0.17*	NS	NS

* $p < .05$ ** $p < .01$ *** $p < .001$. NS: Non-significant relations.

Table 6
Correlations between clinicians' communication perceptions (importance, time/space and skills), professional quality of life and job satisfaction.

Communication perceptions		Professional quality of life			Job satisfaction					
		Compassion fatigue	Compassion satisfaction	Burn-out	Overall	Patient care	Burden	Income prestige	Personal rewards	Professional relations
Building/maintaining relationships	1a Importance	NS	NS	NS	NS	0.35**	NS	NS	0.17*	0.20**
	1b Time/space	-0.21**	0.15*	-0.26**	0.44**	0.36**	0.44**	0.17*	0.37**	0.28**
	1c Skills	NS	NS	NS	0.18*	0.36**	NS	NS	0.15*	0.20**
Exchanging information	2a Importance	NS	0.15*	NS	0.16*	0.19*	15*	NS	NS	NS
	2b Time/space	-0.28**	NS	-0.24**	0.40**	0.29**	0.39**	NS	0.30**	0.26**
	2c Skills	NS	NS	NS	0.16*	0.27**	NS	NS	NS	0.15*
Sharing decision-making	3a Importance	NS	NS	NS	0.19**	0.31**	NS	NS	0.16*	0.20**
	3b Time/space	NS	NS	-0.14*	0.34**	0.33**	0.31**	NS	0.31**	0.21**
	3c Skills	NS	NS	NS	0.17*	0.41**	NS	NS	NS	0.18**
Enabling parent self-management	4a Importance	NS	NS	NS	NS	0.16*	0.16*	NS	0.15*	NS
	4b Time/space	-0.22**	NS	-0.20**	0.31**	0.24**	0.39**	NS	0.25**	0.24**
	4c Skills	NS	NS	NS	0.21**	0.24**	0.20**	NS	NS	0.24**

* $p < .05$ ** $p < .01$ *** $p < .001$. NS: Non-significant relations.

practice.

Finally, it should be noted that, overall, participants score relatively high across all communication functions and indicate that they feel quite capable of communicating with parents during infant hospitalization. More so, they deem communication to be highly important. As communication has been associated with several infant- and parent-related (health) outcomes, this is a good sign. However, there is quite a mismatch between what healthcare providers report in the present study about their communication competence and what parents have reported regarding their experience in terms of parent-healthcare provider communication in the neonatal care unit [11-13]. This mismatch may indicate motivation bias in our convenience sample, including mostly communication enthusiasts. However, it may also signal a blind spot for communication: healthcare providers may believe they perform better than they do according to patients.

Several limitations of our study should be considered: Of course, given our cross-sectional design, no meaningful conclusions can be drawn about causal effects of healthcare providers' communication competence on their professional quality of life, or vice versa. Future studies focusing on assessing these causal relationships (e.g., interventions testing the effects of healthcare provider communication training) or mediation analyses as well as in-depth qualitative explorations to understand the complex relationships between communication and job satisfaction (e.g., interviews or focus groups with healthcare providers) would be useful. The multitude of variables correlated in the present study was unavoidable due to the conceptualization and operationalization of our variables of interest. This should be reconsidered in

follow-up research. Also, due to our convenience sampling strategy, we do not know the response rate to our survey. Participating healthcare providers are likely to find communication particularly important or interesting, perhaps more so than their 'average' colleague. This potentially has caused self-selection and motivation bias in our sample. The low numbers of burn-out and stress, particularly during the COVID-19 crisis, reinforce the suspicion of bias in our sample. In addition, our sample also noticeably included more females than males, and more nursing staff than medical specialists and doctors. However, one could argue this largely corresponds to the composition of an average neonatal care department. Furthermore, it should be noted that the satisfaction sub-scale *income prestige* showed poor internal consistency, after one item was dropped during the pretest. However, we do not believe this has affected (the interpretation of) our results.

Lastly, it is important to critically reflect on our focus on healthcare providers' performance during their most recent conversation as a proxy for their overall communication competence. While we do believe that instructing healthcare providers to think of a particular conversation is a helpful tool when using self-report to assess healthcare providers' concrete communication behaviors across all communication functions, there are several challenges that need to be considered. First, healthcare providers' account of their most recent conversation may differ from reality (or patients' memory thereof), due to recall issues and social desirability bias. As such, future studies should also consider other methods of data collection, including observational designs, which do not (solely) rely on self-report. Second, it should be borne in mind that healthcare providers may report low scores on certain communicative

functions (e.g., *sharing decision-making*), not because they do not perform well but merely because this function was not the focus of this conversation. Third, perhaps even more profoundly, a question that arises is whether doing 'more' of something (e.g., *exchanging information*) is necessarily always 'better'. The instruments we used for the present study are all (largely) based on this premise. This warrants a discussion about how fulfillment of communication functions, and thus healthcare providers' *communication competence*, in neonatal care can be best measured. Further studies could focus on developing a new measurement tool, based on the NICU Communication Framework.

4.2. Innovation

The current study used an innovative, participatory approach including both neonatal healthcare providers and a parent of a preterm infant, who led the research team and designed the study. While inclusion of parents on the research team is becoming more common, the present study goes one step further and is parent-initiated. We used the newly developed NICU Communication Framework as a theoretical basis for our conceptualization of the several functions of communication between parents and healthcare providers throughout infant hospitalization [11-13]. We uniquely focused on healthcare providers' perspective on their communication competence and skills and thereby also added to the further refinement of the NICU Communication Framework.

Notably, present findings emphasize that healthcare providers' communication with patients and their loved ones may be one piece of the puzzle (as obviously there are many) contributing to healthcare providers' professional quality of life and job satisfaction. Furthermore, healthcare providers' job satisfaction can affect their communication behaviors. This finding is not only deserving of attention from a scientific, conceptual point-of-view, but also from the work floor. Fostering healthcare providers' job satisfaction is not only key in retaining staff, but the impact of (sub)optimal communication on patients' wellbeing is extensive.

Hospital departments should particularly consider our new finding that time and space reserved for communication with parents is still suboptimal according to healthcare providers. This may require (further) culture change in neonatal care units. Over the past years, many hospital departments worldwide have shifted to family-integrated models of care (FICare) – to increase parent empowerment and participation by encouraging the full-blown integration of parents in care during infant hospitalization [35-41]. The principles of FICare as well as architectural features such as *single family rooms* have changed provider-parent communication in the NICU. Not only are parents more involved in their infants' care and often more present in the NICU, but the principles of FICare may also allow providers to engage more in communication with parents. Neonatal care departments must therefore pay (further) attention to growing their staff's communication competencies. Future studies should focus on determining the specific communication competencies that require more training, as well as on finding innovative solutions to teaching communication skills to healthcare providers who are persistently lacking in time.

4.3. Conclusion

Healthcare provider-parent communication forms an inherent part of neonatal care. It is therefore perhaps not surprising that the extent to which healthcare providers perform well across communication functions in the NICU (self-reported *communication competence*) is correlated with healthcare providers' professional quality of life. This study thereby contributes to conceptual thinking about the relationships between healthcare providers' communicative behaviors in the workplace and their sense of fulfillment and satisfaction at work. More so, it adds to the development of models focused on communication effects in healthcare provider-patient interactions, like the NICU Communication

Framework. Yet, our findings also warrant reflection on the validity and merit of the NICU Communication Framework. At present, the framework strongly focuses on parent-related outcomes of communication and does not include healthcare provider-related effects of communication. The present study provides a first step towards a more balanced perspective in the framework on parent- as well as healthcare provider-related outcomes. More so, the study results may spark a discussion about what, from a conceptual perspective, determines *communication competence* in the NICU. What does it mean to communicate effectively with parents? In a previous study, starting from the NICU Communication Framework, we sought to (partly) answer this question by providing guidelines for 'tailored' interactions with parents across all functions of communication [13]. However, based on the present study, we believe further reflection is needed on whether single conversations should address all communication functions and whether 'doing more' of a certain function is necessarily always better. The intuitive answer to both questions may be 'no'. However, this warrants further investigations. Moreover, we should consider whether a new measurement instrument might be needed to fit the NICU Communication Framework and to accommodate the aforementioned considerations. While the implications of *communication at work* in the NICU are thus clear, more *work on communication* in this particular context is called for.

CRedit authorship contribution statement

Nanon H.M. Labrie: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Puck Straver:** Writing – review & editing, Data curation. **Anne A.M.W. van Kempen:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Nicole R. van Veenendaal:** Writing – review & editing, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests.

Nanon Labrie reports financial support was provided by Dutch Research Council (grant number: VI.Veni.191S.032). If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The authors are much indebted to all the healthcare providers who took the time to complete our survey, amidst the COVID-19 crisis. We would like to thank Annemarie Hoogerwerf, Esther Jansen, and Rogier de Jong for their participation in the pretest panel. Finally, we would like to thank Sylvia Obermann from Care4Neo, the largest Dutch support organization for parents of preterm infants (and the oldest worldwide), for her assistance during data collection and the feedback provided on an earlier version of this article.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.pecinn.2024.100341>.

References

- [1] Braithwaite M. Nurse burnout and stress in the NICU. *Adv Neonatal Care* 2008;8(6):343–7.
- [2] Meadors P, Lamson A, Swanson M, White M, Sira N. Secondary traumatization in pediatric healthcare providers: compassion fatigue, burnout, and secondary traumatic stress. *OMEGA-J Death Dying* 2010;60(2):103–28.

- [3] Saeidi R, Izanloo A, Izanlou S. A study of the relationship between job satisfaction and burnout among neonatal intensive care unit staff. *Iranian J Neonatol* 2020;11(1).
- [4] Skorobogatova N, Žemaitienė N, Šmigelskas K, Tamelienė R. Professional burnout and concurrent health complaints in neonatal nursing. *Open Med* 2017;12(1):328–34.
- [5] Sano R, Schiffman RF, Shoji K, Sawin KJ. Negative consequences of providing nursing care in the neonatal intensive care unit. *Nurs Outlook* 2018;66(6):576–85.
- [6] Sacco TL, Copel LC. Compassion satisfaction: A concept analysis in nursing. *Nursing forum*. Wiley Online Library; 2018. p. 76–83.
- [7] Sprang G, Clark JJ, Whitt-Woosley A. Compassion fatigue, compassion satisfaction, and burnout: factors impacting a professional's quality of life. *J Loss Trauma* 2007;12(3):259–80.
- [8] Zhang YY, Han WL, Qin W, Yin HX, Zhang CF, Kong C, et al. Extent of compassion satisfaction, compassion fatigue and burnout in nursing: a meta-analysis. *J Nurs Manag* 2018;26(7):810–9.
- [9] Hundall Stamm B. Professional quality of life measure: Compassion, satisfaction, and fatigue version 5 (ProQOL). 2009.
- [10] Bovier PA, Perneger TV. Predictors of work satisfaction among physicians. *Eur J Publ Health* 2003;13(4):299–305.
- [11] Labrie NHM, van Veenendaal NR, Ludolph RA, Ket JC, van der Schoor SR, van Kempen AA. Effects of parent-provider communication during infant hospitalization in the NICU on parents: a systematic review with meta-synthesis and narrative synthesis. *Patient Educ Couns* 2021;104(7):1526–52.
- [12] Loric EL, Wreesmann W-JW, van Veenendaal NR, van Kempen AAMW, Labrie NHM. Parents' needs and perceived gaps in communication with healthcare professionals in the neonatal (intensive) care unit: a qualitative interview study. *Patient Educ Couns* 2021;104(7):1518–25.
- [13] Wreesmann W-JW, Loric EL, van Veenendaal NR, van Kempen AAMW, Ket JCF, Labrie NHM. The functions of adequate communication in the neonatal care unit: a systematic review and meta-synthesis of health professionals' and parents' perspectives. *Patient Educ Couns* 2020;104(7):1505–17.
- [14] Sharma A, Minh Duc NT, Thang T Luu Lam, Nam NH, Ng SJ, Abbas KS, et al. A consensus-based checklist for reporting of survey studies (CROSS). *J Gen Intern Med* 2021;36(10):3179–87.
- [15] Barfield WD, Papile LA, Baley JE, Benitz W, Cummings J, Carlo WA, et al. Levels of neonatal care. *Pediatrics* 2012;130(3):587–97.
- [16] McGuire-Snieckus R, McCABE R, Catty J, Hansson L, Priebe S. A new scale to assess the therapeutic relationship in community mental health care: STAR. *Psychol Med* 2007;37(1):85–95.
- [17] Axboe MK, Christensen KS, Kofoed P-E, Ammentorp J. Development and validation of a self-efficacy questionnaire (SE-12) measuring the clinical communication skills of health care professionals. *BMC Med Educ* 2016;16(1):1–10.
- [18] Scholl I, Kriston L, Dirmaier J, Buchholz A, Härter M. Development and psychometric properties of the shared decision making questionnaire–physician version (SDM-Q-doc). *Patient Educ Couns* 2012;88(2):284–90.
- [19] Miles MS, Carlson J, Brunssen S. The nurse parent support tool. *J Pediatr Nurs* 1999;14(1):44–50.
- [20] Galiana L, Oliver A, Arena F, De Simone G, Tomás JM, Vidal-Blanco G, et al. Development and validation of the short professional quality of life scale based on versions IV and V of the professional quality of life scale. *Health Qual Life Outcomes* 2020;18(1):1–12.
- [21] Hemsley B, Balandin S, Worrall L. Nursing the patient with complex communication needs: time as a barrier and a facilitator to successful communication in hospital. *J Adv Nurs* 2012;68(1):116–26.
- [22] J. Twisk, *Sample-sizeberekeningen, Inleiding in de toegepaste biostatistiek*, Springer, 275–282.
- [23] Levinson W, Pizzo PA. Patient-physician communication: it's about time. *JAMA* 2011;305(17):1802–3.
- [24] Chan EA, Jones A, Fung S, Wu SC. Nurses' perception of time availability in patient communication in Hong Kong. *J Clin Nurs* 2012;21(7–8):1168–77.
- [25] Albsoul RA, Alshyyab MA, Albayyari RY, Alselaibi DH, Flefil SA, Jardaneh LH, et al. Qualitative evaluation of missed nursing care in neonatal intensive care units in a teaching hospital in Jordan. *J Pediatr Nurs* 2023;73:e277–84.
- [26] Dahl TM, Solevåg AL. A cross-sectional study of neonatal intensive care unit overcrowding and understaffing associated with bacterial outbreaks. *Acta Paediatr* 2022;111(11):2090–7.
- [27] Hamilton KES, Redshaw ME, Tarnow-Mordi W. Nurse staffing in relation to risk-adjusted mortality in neonatal care. *Arch Dis Child Fetal Neonatal Ed* 2007;92(2):F99–103.
- [28] Bry A, Wigert H. Stress and social support among registered nurses in a level II NICU. *J Neonatal Nurs* 2022;28(1):37–41.
- [29] Zakiya H, Iskandar S, Primadi A. Perceived effects of COVID-19 pandemic on stress levels and its related factors of NICU nurses. *J Work Behav Health* 2022;37(1):68–86.
- [30] van Veenendaal NR, Deierl A, Bacchini F, O'Brien K, Franck LS, I.S.C.f.F.I. Care. Supporting parents as essential care partners in neonatal units during the SARS-CoV-2 pandemic. *Acta Paediatr* 2021;110(7):2008–22.
- [31] Akerstrom M, Sengpiel V, Hadžibajramović E, Carlsson Y, Graner S, Andersson O, et al. The COPE staff study: study description and initial report regarding job satisfaction, work-life conflicts, stress, and burnout among Swedish maternal and neonatal healthcare workers during the COVID-19 pandemic. *Int J Gynecol Obstet* 2023;162(3):989–97.
- [32] Kolić D, Semaan A, Day L-T, Delvaux T, Delamou A, Benova L. Maternal and newborn healthcare providers' work-related experiences during the COVID-19 pandemic, and their physical, psychological, and economic impacts: findings from a global online survey. *PLOS Global Public Health* 2022;2(8):e0000602.
- [33] Zhang Q, Wu J, Sheng X, Ni Z. Empowerment programs for parental mental health of preterm infants: a meta-analysis. *Patient Educ Couns* 2021;104(7):1636–43.
- [34] Puthusseri S, Chutiyami M, Tseng P-C, Kilby L, Kapadia J. Effectiveness of early intervention programs for parents of preterm infants: a meta-review of systematic reviews. *BMC Pediatr* 2018;18:1–18.
- [35] van Veenendaal NR, Labrie NH, Mader S, van Kempen AA, van der Schoor SR, van Goudoever JB, et al. An international study on implementation and facilitators and barriers for parent-infant closeness in neonatal units. *Pediatr Investigat* 2022;6(03):179–88.
- [36] van Veenendaal NR, van Kempen AA, Franck LS, O'Brien K, Limpens J, van der Lee JH, et al. Hospitalising preterm infants in single family rooms versus open bay units: a systematic review and meta-analysis of impact on parents. *EclinicalMedicine* 2020;23.
- [37] Stelwagen MA, van Kempen AA, Westmaas A, Bles YJ, Scheele F. Integration of maternity and neonatal care to empower parents. *J Obstet Gynecol Neonatal Nurs* 2020;49(1):65–77.
- [38] Stelwagen M, van Kempen A, Westmaas A, Vet E, Scheele F. Parents' experiences with a model of integrated maternity and neonatal care designed to empower parents. *J Obstet Gynecol Neonatal Nurs* 2021;50(2):181–92.
- [39] Stelwagen M, Westmaas A, Van Kempen A, Scheele F. In-hospital education of parents of newborns may benefit from competency-based education: a qualitative focus group and interview study among health professionals. *J Clin Nurs* 2023;32(7–8):1076–88.
- [40] Hoeben H, Obermann-Borst SA, Stelwagen MA, van Kempen AA, van Goudoever JB, van der Schoor SR, et al. 'Not a goal, but a given': neonatal care participation through parents' perspective, a cross-sectional study. *Acta Paediatr* 2024;113(6):1246–56.
- [41] Stelwagen M, Westmaas A, Van Kempen A, Scheele F. Rebalancing of professional identity roles in an integrated maternity and neonatal care setting designed to increase parent autonomy: a qualitative study among health professionals. *J Interprof Care* 2024:1–9.