The Leiden developmental care project : effects of developmental care on behavior and quality of life of very preterm infants and parental and staff experiences

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CHAPTER 6

Staff opinions regarding the Newborn Individualized Developmental Care and Assessment Program (NIDCAP)

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Abstract

Objective

To explore (para)medical and nursing staff opinions regarding the Newborn Individualized Developmental Care and Assessment Program (NIDCAP) implementation in two Dutch Neonatal Intensive Care Units (NICU's).

Methods

A questionnaire was send to the personnel of 2 Dutch NICU's after implementing NIDCAP. The questionnaire measured: a) the perceived impact of NIDCAP on several NICU conditions, b) attitudes, subjective norm and perceived behavioral control, knowledge and abilities of using the NIDCAP method (based on the Theory of Planned Behavior) and c) training interest, requirements, information sources and the relevance of the NIDCAP method for different groups of NICU patients.

Data

Seventy-four percent (124 out of 168) of the questionnaires were returned and respondents were in general positive with regards to NIDCAP and felt that using NIDCAP is fulfilling and leads to improvement in the infant's development, health and well-being. The NIDCAP was however also thought to be time-consuming and might worsen job conditions. Although respondents indicated sufficient abilities and knowledge they also indicated a need for ongoing information and guidance. The use of the NIDCAP method during caregiving was related to a higher perceived behavioral control, intention and subjective norm (R square=0.49). The nursing staff, compared to the medical staff, had a more positive attitude (p=.004), higher perceived behavioral control (p=.004) and perceived a more positive impact of NIDCAP on NICU conditions (p=.008).

Conclusion

When implementing NIDCAP the monitoring of intentions and attitudes, ongoing practical NIDCAP guidance and information, time-efficiency and the involvement of different disciplines are of importance.

Introduction

The Newborn Individualized Developmental Care and Assessment Program (NIDCAP®) is being introduced and used increasingly in Neonatal Intensive Care Units (NICU's) as a more individualized and family-based way of caregiving. Studies have shown that NIDCAP results in positive outcomes such as improved short term medical outcomes [1-4] , better behavioral performance as measured with the Assessment of Preterm Behaviour (APIB) [1,2,5-7], improved cognitive developmental outcome [2,3,5,8], a positive impact on behavior [9], reduced hospital charges [3], less parental stress [1] and improved brain function and altered brain structure [5]. Reviews that report on these NIDCAP studies call for more trials with large samples sizes to study the long-term effects of NIDCAP in multiple settings [10-12].

NIDCAP uses an observational tool based on the Synactive Theory of Development where the preterm infant's behavior is observed along four channels of communication, being: autonomic, motor, state organization and attention-interaction. The infant's efforts at self-regulation and interaction are observed through approach and avoidance behaviors and the infant's efforts and individual goals and recommendations for caregiving are discussed with parents and other caregivers [8,13-15]. An example of an individual recommendation is to give time-outs when the infant shows individual signs of stress or fatigue. The NICU environment and care are also critically reviewed to meet the infant's developmental needs. Examples of basic recommendations are: reduced light, sound and activity levels in the NICU, for example by using incubator covers, and support of positioning, for example by using standardized nests.

Implementing NIDCAP in a NICU is very intensive and asks for changes in the NICU environment, care, expertise and attitudes. Staff may, in return for their effort, experience positive results in the infants and their parents. Als and Gilkerson [14] stated that because NIDCAP is process-guided and relationship-based and not procedure-based, it can be difficult to implement NIDCAP in a NICU which focuses on medical protocols and caregiving routines. Furthermore, NIDCAP is system-orientated and implemented in an

existing organisational structure, social system, and nursing and medical culture which can influence the success of the implementation [14]. When promoting the use of NIDCAP at a NICU, variables predicting the behavior and intention to use NIDCAP are of importance. In the Theory of Planned Behavior (TOPB) [16,17] Ajzen states that intention predicts behavior and intention is thought to be influenced by the individual's attitude towards the behavior, the subjective norm held by important people in their surroundings and how they perceive their control, knowledge and abilities with regards to the behavior.

A study evaluating the NIDCAP implementation in a Swedish setting examined staff opinions and concluded that NIDCAP was in general well received by nursing staff, neonatologists and parents [18,19]. Staff indicated improvements in their ability to assess the infant, the infant's well-being and the opportunities for and quality of parental attachment. This study mainly focused on the impact of NIDCAP on several NICU conditions.

The current study aims to explore nursing and (para)medical staff's opinions concerning the use of NIDCAP in a Dutch NICU at two locations, which could lead to recommendations for future NIDCAP implementation strategies. This study furthermore aims to explore the determinants influencing the intention to use the NIDCAP method in the NICU.

Methods

NIDCAP implementation and subjects

The implementation process of the NIDCAP in a Dutch Neonatal Intensive Care Unit (NICU) at two locations (the Leiden University Medical Center (LUMC) in Leiden and the Juliana Children's Hospital in the Hague) was carried out through a 4 year two-phased randomized controlled trial and was done in steps for research purposes. During the first two years (phase 1), basic developmental care was implemented by using standardized incubator covers to decrease light, sound and activity levels and nesting for positional support. During the last two years (phase 2), official NIDCAP observations and

guidance were implemented under the supervision of a NIDCAP certified psychologist and 5 certified nurses. In addition, clinical NIDCAP lessons were given for nurses who were assigned to take care of the infants receiving NIDCAP care in the randomized controlled trial. After 4 years of implementation a questionnaire concerning the implementation of NIDCAP was sent to the home addresses of the (para)medical and nursing staff of the two locations. Before the questionnaires were constructed, interviews with several staff members were done for orientation. The questionnaires were not numbered to guarantee anonymity of the respondents. As a result it was not possible to track which staff members did not return the questionnaire. General reminder notes were distributed in both locations to remind personnel to return the questionnaire.

Questionnaire

The questionnaire constructed for this study measured a) the perceived impact of NIDCAP on several NICU conditions**,** as used by Westrup in the Swedish NIDCAP study [18,19], b) attitudes, subjective norm and perceived behavioral control, based on the Theory of Planned Behavior [16,17], c) training interest, requirements, information sources and the relevance of the NIDCAP method for different groups of NICU patients questions, and d) background information such as gender, age and work experience of the respondents.

The Swedish questionnaire [18,19] measuring the impact of NIDCAP included 25 NICU related conditions. Staff was asked to indicate their perception of the impact NIDCAP on these conditions on a 5 point Likert scale (1=condition became worse, 2=slightly worse, 3=the same, 4= slightly better, 5=better). In the current study the total scale has a Cronbach's alpha reliability score of 0.92. The items are displayed in Figure 1.

Nineteen items were based on the TOPB [16,17] and were divided over the five factors of the TOPB (Figure 2) being: behavior (1 item), intention (2 items) attitude (8 items), perceived behavioral control (4 items) and subjective norm (4 items). Mean factor scores were calculated for all items belonging to a factor. The items were formulated as statements using a 5 point Likert scale with answer categories ranging from 1 (I totally disagree) to 5 (I totally

agree). In this study, alpha scores for the factors were reasonably good (α's ranged from 0.70 to 0.83, and alpha was 0.53 for subjective norm). Half of the attitude items (nr. 2, 4, 5 and 6) were formulated in a negative way and half in a positive way. When the total attitude factor was calculated, the 4 negatively formulated items were recoded so a higher attitude factor score represented a positive attitude.

Other relevant questions that were thought to be important during the implementation of NIDCAP, for example the respondent's interest to be NIDCAP trained and the requirements for NIDCAP implementation, were added to the questionnaire. All items could be answered by both active users and non-users of the NIDCAP method.

Data analysis

Mean scores and 95% confidence intervals of the means were calculated for the items based on the Theory of Planned Behavior and the items measuring the impact of NIDCAP on NICU conditions. For analysis of the perceived impact of NIDCAP on NICU conditions only the respondents that indicated working for 4 years or more at the two NICU's (when NIDCAP was implemented) were included, because they were thought to be most able to detect change at the NICU. The valid percentages per answer category were calculated for the all other items, for example when describing training interest.

A backward linear regression analysis with all respondents was carried out to check in which way the intention to use the NIDCAP method during caregiving (dependent factor, mean score of two questions on a 5 point Likert scale) was influenced by the respondents' characteristics (block 1; gender, age, being a nurse or neonatologist (or resident), the hospital the respondent works at and the years of work experience), and the factors of the TOBP and the total perceived impact of all NICU conditions combined (block 2; attitude, subjective norm, perceived behavioral control and the total perceived impact). A second similar linear regression analysis was carried out with the actual behavior (the use of the NIDCAP method during caregiving) as

dependent factor and with intention as an additional independent variable. The assumptions for multiple regression were checked.

A comparison between the scores of the nursing staff and medical staff on attitude, perceived behavioral control, subjective norm and mean perceived impact of NIDCAP on the NICU conditions, was done using a two sample t-test.

Results

Respondents

Initially, 168 questionnaires were sent to the home addresses of the NICU personnel of a Dutch NICU at two locations and 124 questionnaires were completed resulting in a return rate of 74% (Table 1). The characteristics of the respondents are displayed in Table 1.

Return rate	Nurses	76% (93 out of 122)
	Neonatologists/pediatricians (in training)	58% (18 out of 31)
	Physical therapists	60% (3 out of 5)
	Lab technicians of NICU	100% (5 out of 5)
	Psychologists	100% (1 out of 1)
	Social workers	50% (2 out of 4)
	Unknown	2
Gender	Male	12% (n=15)
	Female	88% (n=107)
Age	20-35 years	41% (n=50)
	35-50 years	50% (n=61)
	> 50 years	9% (n=11)
NICU	Leiden University Medical Center	51% (n=62)
	Juliana Children's Hospital	47% (n=57)
	At both NICU's	2% (n=3)
Experience	In a NICU (mean)	8.23 years
	In the current NICU (mean)	7.74 years
	> 4 years at current NICU	62% (77)

Table 1. Return rate per profession and characteristics of respondents

Familiarity with NIDCAP, information sources and requirements

Table 2 shows the familiarity of the respondents with NIDCAP, the main NIDCAP information sources and requirements for implementing NIDCAP. More than half of the respondents (63%) were very familiar with NIDCAP. Only 3% of the respondents indicated being only fairly familiar with NIDCAP, which indicates that all respondents were at least somewhat familiar with the NIDCAP construct and related behavior discussed in the questionnaire. The randomized controlled trial at both hospitals and the presentations and education of the NIDCAP team were most often reported as sources of NIDCAP information (Table 2).

" I am familiar with NIDCAP " N=121				
Totally disagree	Fairly disagree	Partly agree/disagree	Fairly agree	Totally agree
0%	3%	7%	28%	63%

Informed through:	**N = 123**	**Requirements implementation:**	**N = 120**
Randomized Controlled Trial	93%	More education	50%
Presentations/education NIDCAP team	60%	More time during caregiving	48%
Clinical lessons	39%	More NIDCAP trained personnel	41%
Education related to profession	37%	More personnel in general	39%
Conversation with colleagues	29%	More materials (nests and covers)	33%
Work meetings/consultations	26%		
Profession related education	25%		
Conferences/symposia	24%		
Daily patients' visits	11%		

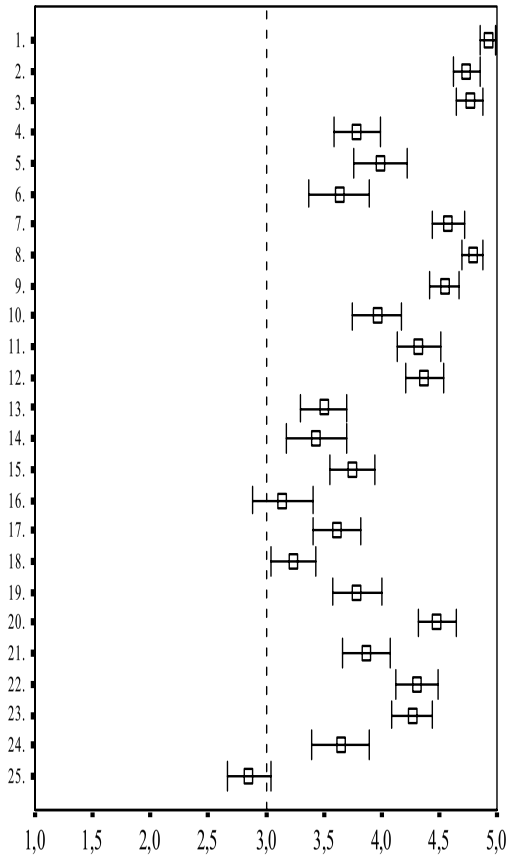
Table 2. NIDCAP familiarity, information sources and requirements for implementation.

Fifty percent of the respondents indicated that more education about NIDCAP is a necessary requirement when implementing NIDCAP (Table 2) and 48% indicated that more time during caregiving is needed. Other requirements indicated were: more multi-disciplinary involvement (especially more involvement of management personnel and physicians), enough standardized NIDCAP supporting materials (nests and covers) and parent facilities and more guidance by a NIDCAP trained staff member during caregiving. One respondent suggested assigning a special nurse to provide NIDCAP support to infants during caregiving. When asked for additional remarks at the final page of the questionnaire, some respondents indicated a need for up to date and continuing clinical lessons with more detailed explanation on the individual application of materials, handling during caregiving and the

individual behavioral signals of infants. They also indicated a need for assistance and instruction from the NIDCAP trained staff on the work floor and suggested providing NIDCAP handbooks for parents and nurses or physicians.

Perceived impact of NIDCAP on NICU conditions

The mean scores and their 95% confidence intervals regarding the perceived impact of NIDCAP on NICU conditions (worse-better) are summarized in Figure 1 for the 77 respondents working for more than 4 years at one of the two locations. Overall, most respondents reported improvement on the NICU related conditions, as a result of NIDCAP. Most improvement (highest scores) was found on the items "..the infant's well-being during hospital stay" (mean=4.92) and "..the infant's well-being due to the reduction of light" (mean=4.79). Neutral or even negative scores were found on the items "..my job satisfaction due to the demand for reduced light" (mean=3.14) and "The individual NIDCAP care plans have influenced the conditions for fulfilling my tasks" (mean=2.85).



As a result of NIDCAP ... has become worse/unchanged/better when compared to conventional care:

1... the infant's well-being during its hospital stay (mean=4.92)
2... my capability to influence the infant's well-being (mean=4.74)
3... the infant's opportunities to rest and sleep (mean=4.76)
4... the infant's ability to cope with enteral feeding (mean=3.79)
5... the safety of the infant (mean=3.99)
6... my capability to assess the infant's condition (mean=3.64)
7... the infant's well-being due to the demands on reduction in sound (mean=4.58)
8... the infant's well-being due to the demands on reduction of light (mean=4.79)
9... the infant's well-being due to the demands on reduction in activity (mean=4.55)
10... the presence of the parents at the infant's bedside (mean=3.96)
11... the parents' way of caring for their infant (mean=4.32)
12... the parents' attachment to their infant (mean=4.37)
13... my own confidence in my professional role (mean=3.50)
14... the conditions for performing my job (mean=3.43)
15... my job satisfaction due to the demand for a reduced sound level (mean=3.75)
16... my job satisfaction due to the demand for reduced light (mean=3.14)
17... my job satisfaction due to the demand for reduced activity (mean=3.62)
18... my working conditions in general (mean=3.24)
19... my satisfaction with my work in general (mean=3.79)

The individual NIDCAP care plans have influenced ...

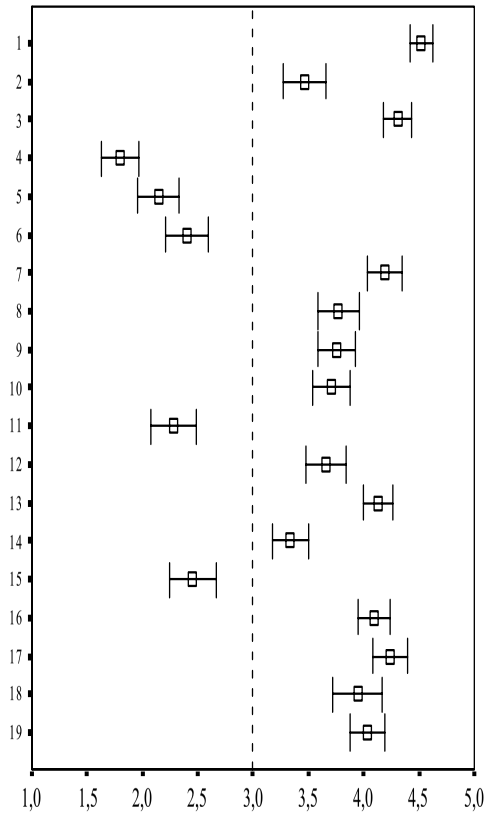
20... the infant's opportunities to rest and sleep (mean=4.48)
21... the presence of the parents at the infant's bedside (mean=3.87)
22... the parents' way of care-giving (mean=4.31)
23... the parents' attachment to their infant (mean=4.27)
24... my opportunities to adequately assess the infant's condition (mean=3.65)
25... the conditions for fulfilling my tasks (mean=2.85)

1 = worse, 2 = slightly worse, 3 = no change, 4 = slightly better, 5 = better

Figure 1. Change in NICU conditions as a result of NIDCAP (95% C.I. of Mean), respondents working ≥ 4 years at NICU (N=71-77).

Attitude, perceived behavioral control and subjective norm (TOPB)

The mean scores for the attitude, perceived behavioral control, subjective norm and intention for all respondents are displayed in Figure 2. The attitude questions show that, in general, respondents had a positive attitude towards using the NIDCAP method and on average considered the use of the NIDCAP method as enjoyable (mean=4.31), fulfilling (mean=4.19). They viewed the use of NIDCAP as an improvement of care (mean=4.52) and an improvement of the infants' health and development (recoded mean=4.20). However, they also felt that it was time-consuming (mean=3.46). Respondents indicated having enough knowledge (mean=3.76) and abilities (mean=3.71) to use the NIDCAP method during caregiving. However, they indicated that it was not their own choice to use the NIDCAP method during caregiving (mean=2.28). The subjective norm of the nursing and medical staff in general about using the NIDCAP method during caregiving was high indicating that respondents felt a strong subjective norm from others (nurses or medical specialists) that they should use the NIDCAP (general subjective norm perceived from nurses mean=4.13 / from medical specialists mean=3.34). Respondents did indicate that the opinion of others was not important for them in their choice to use the NIDCAP method (mean=2.45). Overall, the respondents intended to use the NIDCAP method during caregiving (mean = 3.95 and 4.24) and most of the respondents agreed (mean = 4.03) with the statement of already using the NIDCAP method during caregiving (Figure 2). Of the 4 respondents that did not use NIDCAP 75% (n=3) did have the intention to use NIDCAP in the future and of the 84 respondents that indicated using NIDCAP during caregiving 5% (n=4) did not indicated the intention to continue to use NIDCAP.



Attitude:

1. Using NIDCAP during caregiving is an improvement of our care (mean=4.52)
2. Using NIDCAP during caregiving is time consuming (mean=3.46)
3. It is enjoyable to use NIDCAP during caregiving (mean=4.31)
4. Using NIDCAP during caregiving does not lead to an improvement in the health and development of the infants (mean=1.80)
5. The NICU care is good enough without NIDCAP (mean=2.14)
6. Using NIDCAP during caregiving is not practical when carrying out my job (mean=2.40)
7. It is self-fulfilling to use NIDCAP during caregiving (mean=4.19)
8. Using NIDCAP during caregiving is good for my job progress (mean=3.77)

Perceived Behavioral Control:

9. I have enough NIDCAP knowledge to use NIDCAP during caregiving (mean=3.76)
10. I have enough abilities to use NIDCAP during caregiving (mean=3.71)
11. It is my own choice if I want to use NIDCAP during caregiving (mean=2.28)
12. It is not difficult for me to use NIDCAP during caregiving if I want to (mean=3.66)

Subjective Norm

13. The nurses think the NIDCAP method should be used during caregiving (mean=4.13)
14. The medical specialists think the NIDCAP method should be used during caregiving (mean=3.34)
15. The opinion of others is important to me in my choice to use NIDCAP during caregiving (mean=2.45)
16. I expect others to use NIDCAP during caregiving (mean=4.09)

Intention

17. I would like to use the NIDCAP method during caregiving (mean=4.24)
18. I am planning to use the NIDCAP method during caregiving (mean=3.95)

Behavior

19. I use the NIDCAP method during caregiving (mean=4.03)

1 = totally disagree, 2 = fairly disagree, 3 = fairly agree/disagree, 4 = fairly agree, 5 = totally agree

Figure 2. Agreement with Theory of Planned Behavior statements (95% Confidence Interval of Mean) all respondents (N=116-123).

Factors influencing the use of the NIDCAP method

Four variables remained in a final model (R square =0.40) predicting a higher intention to use the NIDCAP method during caregiving, namely (in order of their contribution): a higher subjective norm, a higher attitude, a higher perceived behavioral control and lower age. In the final model, predicting a higher actual use of the NIDCAP method during caregiving (R square = 0.49), three variables remained, namely: a higher perceived behavioral control, a higher intention and a higher subjective norm. The two final models and the standardized beta per variable are summarized in Figure 3.

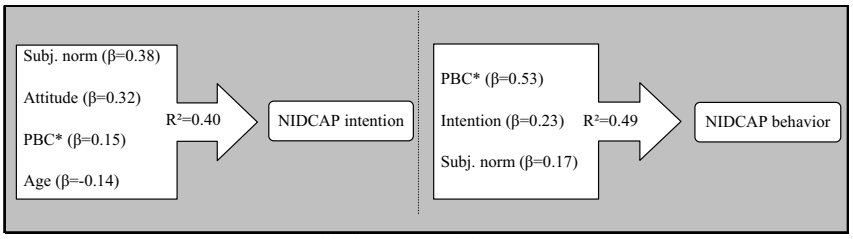


Figure 3. NIDCAP intention and behavior models

* PCB = perceived behavioral control

P-values standardized beta's:

Model 1: Subj.norm + Attitude p=<0.001, PBC p=0.08, Age p=0.08

Model 2: PCB p=<0.001, Intention p=0.007, Subj.norm p=0.04

Table 3 shows that medical staff members, compared to nursing staff, had a significantly less positive attitude towards NIDCAP (p=.004), perceived less behavioral control regarding the use of NIDCAP (p=.004) and indicated less improvement in the NICU as a result of NIDCAP (p=.008).

Factors (range 0-5)	Nursing staff (n=92) mean(sd)	Medical staff (n=18) mean(sd)	Difference (95% CI)
Attitude	3.91 (.60)	3.44 (.62)	.46 (.15;.78)*
Perceived behavioral control	3.42 (.69)	2.90 (.70)	.52 (.17;.87)*
Subjective norm	3.46 (.56)	3.71 (.67)	-.25 (-.54;.05)
NICU conditions (worse-better)	4.01 (.48)	3.69 (.34)	.32 (.08;.56)*
Intention	4.16 (.92)	3.72 (.89)	.43 (-.04;.90)
Behavior (use NIDCAP method)	4.03 (.88)	3.78 (.65)	.26 (-.18;.69)

Table 3. Difference between the medical and nursing staff and the NIDCAP team and other nurses at LUMC NICU.

* p<.01

Necessity of NIDCAP observations, training interest and general remarks

Respondents recommended the NIDCAP observations and guidance most for preterm infants with a gestational age below 30 and 32 weeks (Figure 4) and only recommend the NIDCAP observations in some cases for very ill term infants, infants born small for gestational age and infants with a gestational age below 37 weeks. Respondents indicated that the observations might, in addition, be helpful for irritable or drug-addicted infants and infants with certain problems, for example difficulties with breastfeeding. Respondents furthermore suggested doing only one observation during a specific caregiving interaction when an individual infant showed a specific problem.

One psychologist and 7 nurses were officially NIDCAP trained when they completed the questionnaire. Fifty-eight percent of the other respondents were not interested in doing the official NIDCAP training themselves, 24% was not sure and 17% did want to do the NIDCAP training. The main reasons for not aspiring to do the NIDCAP training were: other priorities, too time-consuming and too much work to write the long NIDCAP reports. The main reasons for interest in the NIDCAP training were to know more about infant behavior and to improve behavior observation abilities during caregiving.

There was a possibility for respondents to provide additional remarks about the NIDCAP implementation in their NICU on the last page. Several respondents indicated that the complete NIDCAP reports were very extensive and too much work to write. Furthermore, the recommendations following the observations were often thought to overlap. Because of this, respondents felt that the observation reports were not read most of the times. They felt that more in depth and up-to-date information about the infant's behavior in the medical record would make the extensive NIDCAP reports superfluous. Furthermore, respondents wanted to be informed about the long-term effects of NIDCAP on the infants' health and development.

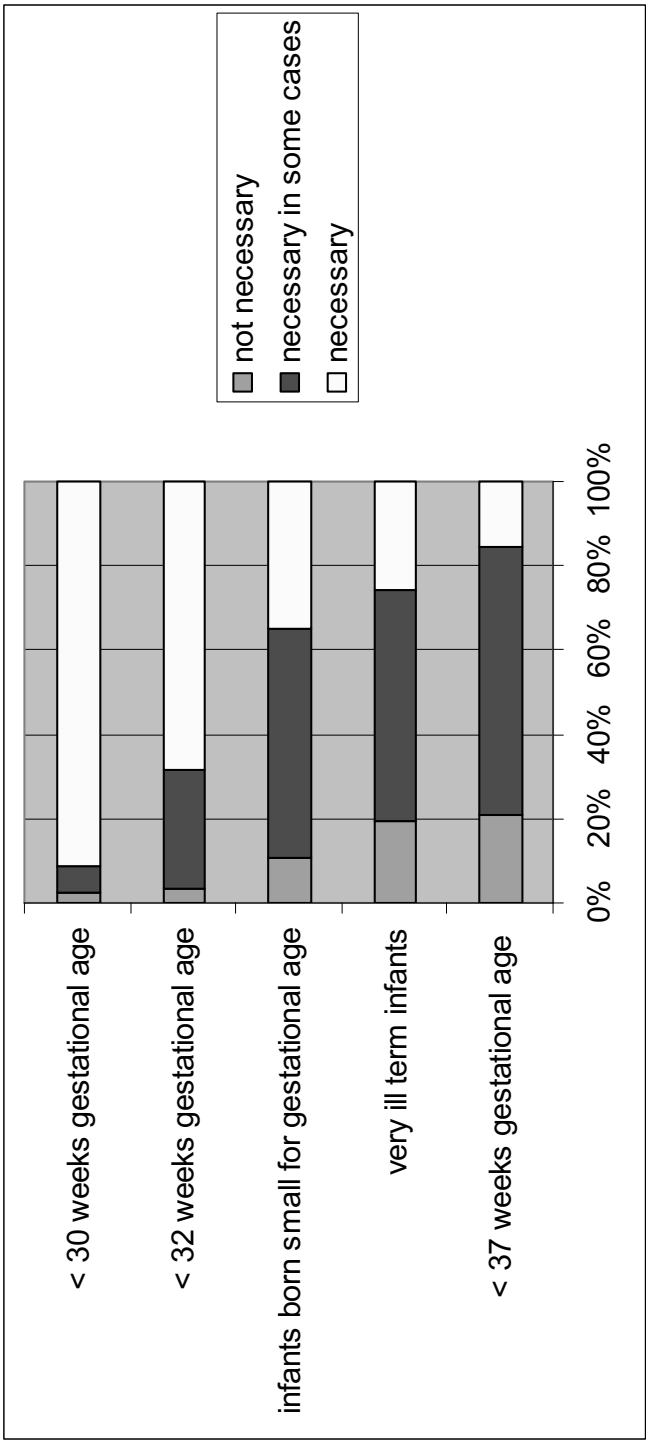


Figure 4. Necessity of NIDCAP observations and guidance (N=113-118)

Discussion

Opinions regarding NIDCAP implementation

This study shows overall positive attitudes of the nursing and (para)medical staff regarding the NIDCAP implementation in a NICU at two locations in the Netherlands. While the perceived benefits of NIDCAP were high, especially concerning the infants' well being, the perceived impact regarding the staff's job conditions was neutral or at some points even negative. For example, the demand to reduce light was considered an improvement for the infant's well-being but could also cause less job satisfaction. The mean scores on the impact of NIDCAP on several NICU conditions and the difference found between the impact of NIDCAP on the infant's well-being and the respondents' work conditions are comparable to the results found in the Swedish study [18,19]. A study by Heermann and Wilson, using structured interviews with open questions, also found both positive and negative results of implementing developmental care [20]. Nurses in this study reported positive experiences as a result of the increasing involvement of parents and parents' ability to participate in care. These nurses, however, also reported feelings of intimidation and loss of control. Als has previously recommended that 10% of the nursing staff needs to be NIDCAP certified to successfully implement the NIDCAP in a NICU [14]. In the current study 17% of the respondents indicated wanting to do the official NIDCAP training, from which can be concluded that NIDCAP training interest at this NICU matches the recommendation of 10% of nursing staff being trained.

Theoretic framework.

Respondents indicated that they used the NIDCAP method during caregiving most of the time. This behavior was influenced most by higher perceived behavioral control, subjective norm and intention. The perceived behavioral control influenced the actual behavior of using the NIDCAP more than the intention to use NIDCAP. Perceived behavioral control therefore seemed important for transitioning from the intention to use the NIDCAP method to the actual behavior. A review study by Godin and Kok [21] showed that the TOPB was well applicable for different health related behaviors (for example exercising, clinical screening or addictions). The current study shows that the

TOPB is also applicable for caregiving related behavior. Being a member of the nursing staff (compared to the medical staff) had a positive effect on attitude, perceived behavioral control and perceived improvement on NICU conditions. A difference between nurses and medical specialists was that nurses received more clinical NIDCAP lessons. Job related priorities and interests might have also influenced these differences.

Methodological considerations.

Presumably selection bias did not influence the results because the return rate was good. The medical staff was somewhat underrepresented in comparison to the other disciplines. Unfortunately, we had no baseline measurements of the opinions of NICU staff on NIDCAP before the implementation, which might have shed more light on the prediction of intention and behavior over time. When exploring opinions of the impact of NIDCAP on the NICU conditions, we only included the respondents working for 4 years or more at the hospital to make sure they were able to report on the change over time due to the implementation of NIDCAP.

Recommendations regarding NIDCAP implementation.

Continuous and up to date information.

When implementing NIDCAP it is important to respond to the need for ongoing information. It is also important to supply staff with the results of recent studies regarding the effects of developmental care and NIDCAP.

Continuous clinical lessons and practical guidance.

In the current study respondents indicated to have enough NIDCAP knowledge and abilities. However, they still felt a need for more and ongoing practical NIDCAP education and practical guidance during caregiving. Continuous clinical lessons and practical assistance during caregiving are needed. A suggestion is to introduce a developmental care or NIDCAP notebook or an email box where staff can indicate on which subjects they need additional practical information or if they want individual instructions during caregiving.

Multi-disciplinary approach.

The subjective norm about NIDCAP in the NICU needs to be considered when implementing NIDCAP. There seems to be a discrepancy between medical and nursing staff on several points. Respondents indicated that especially the nursing staff felt they should use the NIDCAP method during caregiving and indicated that medical staff and management personnel should show more involvement. When forming a NIDCAP team, all relevant disciplines should be included, such as physicians, managing personnel, psychologists, social workers and a parent representative (to include parent opinions). Involving physicians is important because they handle infants frequently and communicate the condition of the infant to the parents. Adapted clinical lessons for medical specialists highlighting NIDCAP information relevant for medical specialists are recommended.

Possibilities to improve job conditions.

Because the implementation of NIDCAP might worsen job conditions, for example through the reduction of light, possibilities should be reviewed to make sure the infant's well-being improves but not at the expense of the job conditions of the staff. One option is to create a separate area for other nursing activities, such as charting, apart from the area where the infants sleep and where the demands for reduced light, sound and activity may benefit the infants.

Review possibilities for efficiency.

One of the reasons why respondents were not interested in the official NIDCAP training was that they felt the NIDCAP reports were too extensive and overlapped most of the time. It is advisable to summarize the most important recommendations for an individual infant and place them next to the incubator, primarily as a short reminder for the medical and nursing staff. This worked well in the NICU described in this study. However, the reports of the observations also contain new and interesting information for parents who are not familiar with the neonatal caregiving. Furthermore, the reports contain important additional information for staff about the infant's individual goals and behavior. The first report might therefore need to address all relevant topics belonging to the official NIDCAP observations [14], while the

following reports might be shortened updates with the most relevant findings and not too many repetitions. Possibilities for extra time during caregiving and time efficiency should also be reviewed.

The recommendations for the implementation of NIDCAP as stated here resemble those described by Als and Gilkerson [14], i.e.: the assignment of a developmental staff position (one full-time developmental specialist, one full-time developmental nurse and a parent representative), ongoing NIDCAP training, leadership involvement, a multi-disciplinary developmental team and opportunities for a reflective process with regularly scheduled supervision.

In conclusion, staff opinions and experience regarding NIDCAP are positive in a Dutch NICU at two locations included in this study. The decision to implement NIDCAP should be evaluated by the individual units and based on the outcomes from future research. When deciding to implement NIDCAP the (para)medical and nursing staff's opinions and suggestions should be well monitored and it is important to supply information and ongoing practical guidance. Time-efficiency and the involvement of different disciplines are also of importance.

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