Stress and discomfort in the care of preterm infants: A study of the Comfort Scale and the Newborn Individualized Developmental Care and Assessment Program (NIDCAP®) in a Dutch level III NICU

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A survey on job satisfaction among nursing staff before and after introduction of the NIDCAP model of care in a level III NICU in the Netherlands

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ABSTRACT

Purpose To study the effect of introduction of the Newborn Individualized Developmental Care and Assessment Program (NIDCAP) on job satisfaction of nursing staff.

Subjects Registered nurses, with specialist neonatal qualifications or in training, in a level III Neonatal Intensive Care Unit (NICU) in the Netherlands.

Design and Methods A survey was performed before (2001) and six months after (2003) introduction of NIDCAP as the new model of care. Job satisfaction was measured by means of The Index of Work Satisfaction (IWS).

Principal Results From the 74, respectively 70 nurses on the payroll, before and after introduction of NIDCAP, 67.6% and 80% responded. No differences were seen in background variables between both groups. Individual components of the IWS on importance as well as satisfaction were ranked in the same order before and after NIDCAP introduction. The results on the IWS demonstrated no change in the overall satisfaction rate, respectively 14.4 and 14.5. Only in one component, organizational policies, the mean score increased statistically significant (3.68 and 4.13 respectively, p = 0.008). The other component scores did not increase significantly.

Conclusions Major changes in nursing care practice by means of NIDCAP, in our neonatal intensive care unit did not affect overall satisfaction. Scores suggested nursing staff to be persistently satisfied about their job.
INTRODUCTION

The Newborn Individualized Developmental Care and Assessment Program (NIDCAP) is introduced, and used increasingly in Neonatal Intensive Care Units (NICU’s) to improve developmental outcome of preterm infants.

NIDCAP is based on the Synactive Theory of Development. The basic assumption of this theory is the competence of the newborn infant. This is conceptualized as the degree of smoothness and modulation, regulation, and differentiation of the five different subsystems of functioning: autonomic, motor, state regulatory or state organizational, attentional/interactional and self regulatory system. These subsystems mature simultaneously and have a synergistic influence on each other throughout development. Infant’s behavior can be observed in a systematic way and provide the basis for the estimation of the infant’s current goals in development. Recommendations for support of infant’s development to reach these goals concerning the physical environment in the NICU for infant and family, the timing and organization of appropriate interventions, the support of the parents’ in supporting their infant’s development and the coordination of care delivered by special service providers. NIDCAP has been subject of several studies in the United States as well as in Europe. It has been reported to decrease the requirement of ventilatory assistance, oxygen supply and length of stay, enhancing weight gain and improving long-term development.

In 2001 preparations were started to introduce NIDCAP as the new model of care in the NICU of the Emma Children’s Hospital / Academic Medical Center, a 28 bed level III unit in Amsterdam, the Netherlands. At that moment the NICU had a shortage and high turnover of nursing staff. In the first half of 2001 the NICU had a quantitative shortage of nursing staff of around 12%. From the 80.6 Full Time Equivalents (FTE) 70.8 were occupied. The turnover was high; experienced nurses left for various reasons and only a few new nurses were recruited. Moreover, there was a mean absence of 16% due to illness (pregnancy excluded).

While in literature numerous factors have been linked to nurse turnover, low job satisfaction is most frequently cited. Literature on job satisfaction among nurses agreed on job satisfaction as the key factor in nurses’ turnover and job satisfaction was suggested to be related to organizational, professional and personal factors. A framework connecting organizational and personal factors, work environment and patient outcome with job satisfaction was suggested in literature. One of the factors influencing such a framework was identified as the model of care delivery.

We hypothesized that changing care into care according to NIDCAP principles could affect job satisfaction of the current nursing staff of our NICU. Job satisfaction in relation to changing work conditions according to NIDCAP has not been studied in detail. In one study staff was asked, one year after NIDCAP implementation, to express their opinions on the impact of NIDCAP by using a survey with statements which were developed for...
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this purpose. Two items referred to job satisfaction; “my working conditions in general have become worse/unchanged/better when compared to conventional care” and “my satisfaction with my work in general has become worse/unchanged/better when compared to conventional care”. Despite the demand for changes in the environment (sound, light and activity) and the way of caregiving involved, the staff experienced an improvement in their working conditions and enhanced job satisfaction. However, statistics were not provided. The same questions were asked in another study, four years after implementation started, and showed no change in working conditions or satisfaction.

Others studied satisfaction in relation to sound and light modifications in the environment and found staff to be highly satisfied (86% pro) with reductions in sound levels and a mixed (61% pro and 35% con) reaction to reduced light levels.

Both quantitative studies focused mainly on satisfaction due to environmental changes but NIDCAP is supposed to change more than the physical environment. It changes organizational structures, the philosophy, planning and delivery of care, attitudes of professionals and relations between family and professionals as well. Other studies have been performed on experience and opinions of nursing staff regarding NIDCAP or developmental care and implementation or training. However, these studies did not address job satisfaction.

A study on utilization of nursing research in the NICU used developmentally supportive care (operationally defined as modification of the physical environment) as the clinical focus for the study. This study used the Index of Work Satisfaction (non revised edition) and found a statistical significant difference in the score for job satisfaction. Scores on subscales increased statistically significant (autonomy, task, nurse/nurse interaction), or increased but not significant (organizational policies, professional status and pay) over the course of the study.

The aim of the study presented here was to explore if NIDCAP introduction affected job satisfaction of the nursing staff in our level III neonatal intensive care unit.

METHODS

Study design

A pre- and post- survey using a self-administered questionnaire was used to assess job satisfaction before and shortly after introduction of NIDCAP to answer the following research question: Are nursing staff members satisfied with their job after the introduction of NIDCAP in our level III neonatal intensive care unit?
Sample and Setting

Job satisfaction was assessed twice in a sample of Registered Nurses (RN) with specialist neonatal qualifications or in training for this qualification. This study was carried out in the level III NICU of the Emma Children’s Hospital / Academic Medical Center, a teaching and referral hospital in Amsterdam, the Netherlands. Around 500 preterm infants with a gestational age of ≥ 25 weeks were admitted to the NICU per year. The 28 bedded NICU has three units, 2 intensive care units, with 10 beds each, and 1 post intensive care unit of 8 beds.

All RN’s on the payroll of the NICU on August the 1st 2001 (N = 74) were asked to voluntary participate in the pre-survey. NIDCAP was introduced in the last trimester of 2001. A post- survey was performed, six months after introduction of NIDCAP, among all RN’s on the payroll on May 1st 2003 (N = 70). All RN’s received a questionnaire in their mailbox at work and were asked to complete this questionnaire within 3 weeks. It required 30 minutes to complete the questionnaire. A written follow-up reminder was sent to all potential subjects, at the end of this three weeks period and again two weeks thereafter.

Demographics, personal or descriptive items other than age, gender and years of experience were not collected. The target was the nursing staff as a group and not specific subgroups.

Completing the questionnaire was seen as consent. The Research and Ethics Committee approved this study.

The NIDCAP Introduction Path

A multidisciplinary taskforce identified the need for change from basic to a higher level of developmental care consisting of a plan for integration of the concepts and philosophy of NIDCAP into the nursery environment in terms of organizational policies and practices. The availability of necessary resources was considered. Alliances among all disciplines (nurses, doctors, physical therapists, social worker and psychologist) involved in the care of the preterm infant and the parents were build to guarantee involvement of all. Plans were conceptualized in collaboration with a research group set up for the embedding of NIDCAP introduction in a scientific context.

When the pre-survey was conducted, infants received the standard care practiced at the NICU at that time. The underlying principal of the nursing care system in our unit was primary nursing. Two nurses, due to part time working factors, had a shared responsibility towards one patient and were the care planners as well as the principal caregivers. As far as managing work and care concerns it was a non hierarchical unit, responsibilities were shared and head nurses provided logistic necessities and coordinated patient flows.

Care included encouragement of skin-to-skin holding (kangaroo care), promoting breastfeeding, early use of clothing in the incubator, use of sheepskins, hammocks, provision of pacifiers and stuffed animals or toys. Making a diary was a common habit.
as well. Parents were motivated to take part in daily care procedures as much as possible and were allowed to come to their infant 24 hours a day.

After the pre-survey was conducted, five registered nurses with specialist neonatal qualifications, including a nurse educator responsible for the specialist neonatal qualification course, started NIDCAP training. All professionals (nurses, doctors, physical therapists, laboratory personnel, social workers) involved in neonatal care in our NICU, were educated by means of a one day NIDCAP Introductory Course, lectured by an official NIDCAP trainer. The NIDCAP was introduced gradually in the nursery starting October 2001. The project leader, already NIDCAP certified, gave training on the job in recognizing signs and signals of the preterm infants to different types of handling. Sound, light, activity, handling and positioning were subject of several discussion meetings. The NIDCAP trainer facilitated the above mentioned processes.

Changes took place gradually and on an evolving basis. After certification of the five nurses, we introduced NIDCAP in a specified study group of infants. Infants born before thirty weeks of gestation and their parents received NIDCAP. The NIDCAP consisted of the Naturalistic Observation of Newborn Behavior (NONB), the behavioural observation belonging to the NIDCAP. The observer observed the infant for 60-90 minutes but had no interaction with the infant. Included were a 10 minutes pre-activity observation and at least a 20 minutes post activity observation period. A caretaking interaction was observed, like suctioning, diaper change, feeding session or blood sampling. A case report was written assessing the infants’ current ability to organize and modulate the five subsystems, following the observation. The case report consisted of several standard parts: introduction, description of the nursery environment, the behavior of the child before, during and after caregiving interaction, a summary consisting of the medical history, the last 24 hours and the present behavioural functioning and the current goals of the infant. Adjustment and individualization of care and environment based on the observation and caregiving recommendations to support the individual infants’ development were formulated. A developmental care plan was based on the case report. Recommendations and care plan were discussed with the parents, the professional who was observed in interaction with the infant and the primary nurse.

The observations started within 3 days after birth and were repeated every 7 to 10 days thereafter or when major changes had occurred. The NIDCAP certified nurses were responsible for the consistency and adherence of the developmental care plans provided. The NIDCAP intervention was provided until discharge of the NICU.

Sessions of reflection with all professionals present were held twice a week from the start of the project onwards. Sessions of reflection were facilitated by the project leader. In these sessions experiences resulting from changing practice into NIDCAP were exchanged and discussed and one was seeking to answers and solutions to questions or problems through exploring one’s thoughts, feelings, choices and actions.
Outcome and Measure

Job satisfaction assessment was done using the Index of Work Satisfaction (IWS revised edition) developed specially for nurses, widely used and the best available tool at that moment. The IWS is designed to measure factors within the scope of the organization, and the components included are designed to measure a variety of factors that are central to the perception of satisfaction, providing information that could be of practical use of management.

The IWS is a two-part tool to measure nurses’ expectations (importance) and satisfaction with each of 6 job components: pay, autonomy, task requirements, organizational policies, interaction, and professional status (Figure I). Internal consistency of the IWS has been well documented (Cronbach’s alpha 0.82, Kendall’ Tau 0.92). The construct validity of the IWS is documented by means of factor analysis and individual one-way ANOVAs, all components were significantly related to the overall scale at <.0001 level of significance.

Figure I Index of Work Satisfaction Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay</td>
<td>Dollar renumeration and fringe benefits received for work done</td>
</tr>
<tr>
<td>Autonomy</td>
<td>Amount of job-related independence, initiative, and freedom, either permitted or required in daily work activities.</td>
</tr>
<tr>
<td>Task Requirements</td>
<td>Tasks or activities that must be done as a regular part of the job</td>
</tr>
<tr>
<td>Organizational Policies</td>
<td>Management policies and procedures put forward by the hospital and nursing administration of this hospital</td>
</tr>
<tr>
<td>Interaction</td>
<td>Opportunities presented for both formal and informal social and professional contact during working hours</td>
</tr>
<tr>
<td>Professional Status</td>
<td>Overall importance or significance felt about your job, both in your view and in the view of others</td>
</tr>
</tbody>
</table>

(With permission of P. Stamps)

In the first part (part A) of the IWS expectations regarding 15 paired comparisons (see for example Figure II) are rank ordered; weighted values are calculated to reflect the importance of each component (scoring range 1-7). For part B of the IWS regarding satisfaction, scores for each component (6 to 10 statements per component, 44 statements in total). A 7 point Likert attitude scale (1 reflecting strongly agree to 7 reflecting strongly disagree) was used for measurement (see for example Figure III). This total scale score (range 44–308) estimates the unweighted level of satisfaction. In order to have weighted scores, the IWS index itself must be calculated (range 0.9–37.1) representing the overall summary of level of satisfaction.

The IWS was translated into Dutch by the research group and translated back into English by an independent bilingual nurse educator and was sent to the author for approval. Approval and permission to use the IWS was granted by Stamps.
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Figure II Example Part A of the Index of Work Satisfaction

Part A (Paired Comparisons)

Please choose the one member of the pair, which is most important to you.

<table>
<thead>
<tr>
<th></th>
<th>Professional Status</th>
<th>or</th>
<th>Organizational Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pay Requirements</td>
<td></td>
<td>Task Requirements</td>
</tr>
<tr>
<td>2</td>
<td>Organizational Policies</td>
<td>or</td>
<td>Interaction</td>
</tr>
<tr>
<td>3</td>
<td>Task Requirements</td>
<td>or</td>
<td>Organizational Policies</td>
</tr>
<tr>
<td>4</td>
<td>Professional Status</td>
<td>or</td>
<td>Task Requirements</td>
</tr>
<tr>
<td>5</td>
<td>Pay</td>
<td>or</td>
<td>Autonomy</td>
</tr>
</tbody>
</table>

(With permission of P. Stamps)

Figure III Example Part B of the Index of Work Satisfaction

Part B (Attitude Questionnaire)

Please circle the number that most closely indicates how you feel about each statement. The left set of numbers indicates degrees of agreement. The right set of numbers indicates degrees of disagreement.

<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>My present salary is satisfactory.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>2</td>
<td>Nursing is not widely recognized as being an important profession.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>3</td>
<td>The nursing personnel on my service pitch in and help one another out when things get in a rush.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>4</td>
<td>There is too much clerical and “paperwork” required of nursing personnel in this hospital.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>5</td>
<td>The nursing staff has sufficient control over scheduling their own shifts in my hospital.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>6</td>
<td>Physicians in general cooperate with nursing staff on my unit.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>

(With permission of P. Stamps)

Data Management and Statistics

Data was statistically evaluated using SPSS 12.0 software (SPSS, IL, USA). For part A from the IWS, importance score, a frequency matrix was created, a proportion matrix developed, numbers transferred to z values and a constant added to produce positive values conform the scoring workbook accompanying the IWS. Components were ranked according to relative importance. For part B, satisfaction, percentages were calculated for
each response option in each statement and scores on the 6 scale components were calculated. To calculate the Index of Work Satisfaction, component scores on importance (part A) were multiplied with component scores on satisfaction (part B), summed and divided by six (the number of components).

Descriptive statistics were used for participants’ characteristics and IWS statements. Chi squared test, t-test, Fisher’s exact test or Mann Whitney U-test was applied for group comparisons, when appropriate.

RESULTS

The response at baseline was 67.6% (50 of 74 nurses) and two years later after introducing NIDCAP 80% responded (56 of 70). From the 74 nurses on the payroll at the first measurement, 61 were still present during the second measurement; nine nurses were new on the payroll at the second measurement. All nurses on the payroll had a western ethnical background. There were no significant differences in mean age (range, SD) before and after introduction of NIDCAP, respectively 38.7 years (23-59, 8.2) and 39.4 (22-54, 8.7) (p = 0.708) or in age categories (p = 0.553) (Table I). There were no differences in gender between both groups. The mean (range, SD) number of years of working experience in the NICU differed before and after introduction of NIDCAP respectively 6.8 (0-26, 6.6) and 8.3 years (0-26, 6.8) but not significantly (p = 0.079) as shown in Table I. The group had the same consistency regarding educational levels at baseline and after introducing NIDCAP; 4% versus 6% head nurses, 84% versus 86% RNs with specialist neonatal qualifications and 12% versus 8% RNs in training for specialist neonatal qualifications (p = 0.417).

The level of satisfaction of the nurses was determined by calculating importance scores first. This resulted in the following order of job satisfaction components, from high to low: autonomy, interaction, pay, professional status, task requirement and organizational policies. After introducing NIDCAP, the nurses ranked the components in the following order autonomy, interaction, pay, task requirement, professional status and organizational policies, no statistically significant differences were seen (Table II). The values of the levels of importance of each component are shown in Table II.

Satisfaction scores (Part B) are ranked in a somewhat different order compared to importance scores, from most to least satisfied: autonomy, professional status, interaction, task requirements, organizational policies and finally pay. The ranking at baseline and after introducing NIDCAP were exactly the same (Table II). However, scoring on the individual component of organizational policies improved significantly, mean score 3.68 vs. 4.13 points (p = 0.008) after NIDCAP introduction. Total scale score (all 44 items together) increased from 205.4 to 208.5 which was not significant.
The IWS index was calculated, representing both the level of importance and the current level of satisfaction. The IWS at baseline was 14.4 and after introducing NIDCAP the IWS was 14.5, which is not statistically significantly different.

At the level of individual statements, 7 statements differed significantly (p < 0.05) between baseline and after introduction of NIDCAP. Belonging to the component professional status “Nursing is not widely recognized as being an important profession” (respectively 3.04 vs. 3.96, p = 0.005). Within the component task requirements “I have sufficient time for direct patient care” (respectively 5.86 vs. 5.14, p < 0.0001) in favour of the baseline measurement, “I think I could do a better job if I do not have so much to do all the time” (respectively 5.10 vs. 4.45, p = 0.042) and “I have plenty of time and opportunity to discuss patient care problems with other nursing service personnel” (respectively 5.54 vs. 4.95, p = 0.033). Within the component autonomy “I have too much responsibility and not enough authority” (respectively 5.88 vs. 5.41, p = 0.010). “There are not enough opportunities for advancement of nursing personnel at this hospital” (respectively 3.84 vs. 4.54, p = 0.033), part of organizational policies. Within the pay component “From

<table>
<thead>
<tr>
<th>Table I Characteristics of Nurses on the Payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline (N= 74)</td>
</tr>
<tr>
<td>Mean Age [years (range, SD)]</td>
</tr>
<tr>
<td>&lt; 30 years of age</td>
</tr>
<tr>
<td>30 – 39 years of age</td>
</tr>
<tr>
<td>40 – 49 years of age</td>
</tr>
<tr>
<td>≥ 50 years for age</td>
</tr>
<tr>
<td>Gender (f/m)</td>
</tr>
<tr>
<td>Mean Working Experience NICU [years (range, SD)]</td>
</tr>
<tr>
<td>&lt; 1 year</td>
</tr>
<tr>
<td>1 – 5 years</td>
</tr>
<tr>
<td>6 – 10 years</td>
</tr>
<tr>
<td>11 – 15 years</td>
</tr>
<tr>
<td>≥ 15 years</td>
</tr>
<tr>
<td>Educational level</td>
</tr>
<tr>
<td>Management</td>
</tr>
<tr>
<td>RN*</td>
</tr>
<tr>
<td>RN in training†</td>
</tr>
</tbody>
</table>

*registered nurse with specialist neonatal qualifications
†registered nurse in training for specialist neonatal qualifications

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what I hear about nursing service personnel at other hospitals, we at this hospital are being fairly paid” (respectively 3.12 vs. 2.58, p = 0.041).

Although it was not the subject of the study we were curious what had happened with rates on absence and shortage of nursing staff. The absence due to illness decreased from 16% to 10.5% in the period after introducing NIDCAP and the shortage of staff decreased from 12% to 10%, due to a decrease of part time factors among the staff. However, these differences were not statistically significant.

**DISCUSSION**

The response rate in this explorative study was adequate, respectively 67.7% and 80.0%. Response rate of 60% for questionnaires is considered sufficient to give a valid impression of the opinion towards a topic in this case job satisfaction among nursing staff in our NICU. 23 In a survey on 30 studies using the IWS as measurement tool response rates varied from 10 to 100% with a mean of 59%.6 One of these studies was amongst NICU personnel which had a response rate of 75%.6

Results from this study suggested that introducing NIDCAP does not affect the overall level of job satisfaction among nurses in the time span of almost two years as used in this study. It was of clinical relevance to us that the calculated IWS index scores in this study (14.4 and 14.5) suggested that nurses in our setting were persistently satisfied about their jobs. From the previous mentioned survey it appeared that the most common IWS index value is around 13.6 Only two studies showed a score higher than 14.6

**Table II** Importance and satisfaction scores measured with the Index of Work Satisfaction

<table>
<thead>
<tr>
<th>Component</th>
<th>Importance (Part A)* Mean Score†</th>
<th>Satisfaction (Part B) Mean Score†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline (N = 50)</td>
<td>after NIDCAP (N = 56)</td>
</tr>
<tr>
<td>Autonomy</td>
<td>3.98</td>
<td>3.78</td>
</tr>
<tr>
<td>Pay</td>
<td>3.38</td>
<td>3.39</td>
</tr>
<tr>
<td>Professional Status</td>
<td>2.77</td>
<td>2.77</td>
</tr>
<tr>
<td>Interaction</td>
<td>3.57</td>
<td>3.49</td>
</tr>
<tr>
<td>Task requirements</td>
<td>2.60</td>
<td>2.88</td>
</tr>
<tr>
<td>Organizational policies</td>
<td>2.30</td>
<td>2.35</td>
</tr>
</tbody>
</table>

* Importance scores are calculated by adding the number of times each component is rated more important than a paired component, dividing by the number of respondents to create a frequency matrix. From this number a proportion matrix is developed, transformed to z values, and a constant added, resulting in a positive value for each component (range 1-7).
† Total satisfaction score divided by number of statements in each component (range 1-7).
‡ Mann Whitney U-test= 984.5, p=0.008
An additional factor contributing to the absence of more striking findings may be that job satisfaction could be influenced by (unknown) external factors such as work-to-family and family-to-work conflicts, demographic characteristics, personality. Consequently, the activities at the unit level may not be strong enough to overcome the (negative) effects from these external factors.

Satisfaction is a multifaceted phenomenon, so one has to look beyond the IWS index itself and look at the level of satisfaction represented by the mean scores for each component.

**Autonomy** was rated the most important and the most satisfying component. Introducing NIDCAP gave the nurses less latitude to make decisions for their patients on their own knowledge and experience, due to the fact that NIDCAP trained professionals took over a part of the autonomy by providing them with recommendations for care and support of the development. Dealing with this shared autonomy due to the presence of a new (NIDCAP trained) professional should be an item of reflection. Change in autonomy is visualized in the statement of the nurses to have too much responsibility and not enough authority, significant more nurses agreed with this statement after NIDCAP introduction. However, the satisfaction score on autonomy did not change by introducing NIDCAP. Looking at data of comparable studies using IWS, the earlier mentioned survey and a second survey using the IWS among 4 Canadian acute care hospitals (1 for children) the score on this component in our study was rather high, 5.45 compared to both surveys (4.7 and 4.68).

**Interaction** was ranked as the second most important component. Within primary nursing interaction among nurses and between nurses and medical doctors was already an important issue. NIDCAP introduction added the dimension of interaction between nurses and NIDCAP trained professionals (also nurses in our case). Satisfaction scores increased after NIDCAP introduction pointing in the direction of positive judgment of this dimension of interaction added. Comparative data from both surveys (4.7 and 4.83) illustrating the score to be somewhat high, 5.13.

**Pay** is a component which can not be influenced by changing the model of care. Pay, in the Netherlands, depends on appointments of the national government with the association of academic hospitals and the unions. Pay is for that reason not discussed any further.

**Professional status** was not ranked as a very important component. Nurses were satisfied with their status as was reflected in the satisfaction being one of the highest scores. During the study in the media (television, radio, newspapers) extensive attention was paid to the introduction of NIDCAP pointing out the importance of the role of neonatal nursing and neonatal nurses. This might be an explanation for the significant difference, reflecting more disagreement on the statement of nursing not being widely recognized as an important profession and consequently on the increase of the component of professional status (from 2.77 to 5.25). However, in the surveys comparable scores were shown, 5.3 and 5.26.
Task requirements was ranked as rather unimportant compared to the other scale components. Nurses were a little less satisfied about their tasks requirements. NIDCAP introduction brought about a major shift in the tasks and activities of nurses from care based on routine to care based on the signs and signals of the infant and from task based to relation based care. Most care was performed with two nurses, one nurse performing the care and one nurse comforting and containing the infant. Nurses had to leave schedules and had to change to performing care that was based on the needs of the infant and family. Furthermore nurses had to consider recommendations, made by the NIDCAP trained nurses and were no longer able to perform tasks and activities as they used to do. Longer periods of not performing patient related activities became more common with the introduction of NIDCAP.

Introducing NIDCAP resulted in significant differences on the level of statement scores. There was more agreement with the statement on having enough time for patient care and less disagreement with the statement on doing a better job in relation to the amount of work. The score on the statement of having plenty of time to discuss patient care problems with nursing colleagues reflected more disagreement after introduction of NIDCAP. Despite the reflection sessions on NIDCAP twice a week, the nurses were not satisfied with the amount of time available. More time for discussion and reflection was needed. The reason for finding this disagreement could be that the process of change is a time consuming one. So, it is possible that the scores reflect the process of change rather then how satisfied nurses were with their new package of tasks and activities.

Organizational policies was scored as the least important component. However, it was the only component with a statistical significant increase after NIDCAP introduction. All statements of this component had about the same scores before and after NIDCAP introduction except for one. The statement on not enough opportunities for advancement was statistically significant more disagreed with. New educational possibilities as the NIDCAP training for the nurses are likely the cause of this change. Nurses were much more satisfied with the organizational policies (3.68) compared to the nurses in the two surveys (3.4 and 2.94).6,12

LIMITATIONS
The limitation of a survey is that the information obtained with a survey tends to be relatively superficial. Despite the excellent response rate the potential for non-response bias exists, we were not able to compare characteristics of respondents and non-respondents because of the anonymous questionnaires.

Performing a pre- and post-survey over a time period of several years there is always the risk of the uncontrollable natural course of nursing staff changes as appeared in this study, and aging resulting in comparing not completely identical group situations. Due to the fact questionnaires were anonymous and irreducible we were not able to restrict analysis to nurses responding to both surveys.
The relationship between nurse and job satisfaction may also be affected by personal circumstances. It is possible that the period of time between our two moments of measurement was too short to capture the nurses’ satisfaction with the new model of care. Possibly, feelings regarding change in itself were measured. A third measurement after full implementation would be worthwhile. However, the IWS has restrictions due to its character; it reflects the level of satisfaction of the individual nurse instead of the nursing staff as a group. Recently the IWS was adapted to change the focus from the individual RN to the unit RN work group. For example, “I have sufficient time for direct patient care” now is “Nurses with whom I work would say that they have sufficient time for direct patient care”. The item focus on the workgroup is logically congruent with and supports interpretation of the unit-level nurse satisfaction score, which is calculated by aggregating individual RN scores on the survey. The clinimetric properties of the adapted version have not yet been studied.

Since this study involved only one organization, generalization of results beyond this setting may be questioned.

CONCLUSION

This study provides a first exploration of the effects of introducing NIDCAP on satisfaction of the nursing staff in a NICU. Clinical significant findings have emerged. We showed that overall satisfaction levels of the nurse group were not significantly affected by introduction of NIDCAP. Secondly, four out of six components showed an increase in mean satisfaction scores and one increased statistically significant (organizational policies), only one component (task requirements) had a decreased mean satisfaction score.

Taking in account that nurses in our setting were already reasonably satisfied about their jobs before NIDCAP introduction and knowing that the second measurement took place immediately after the introduction phase we expect satisfaction scores to increase after completing full implementation of NIDCAP, which can take more than five years. These findings re-emphasize the interest of measuring nurse job satisfaction before and during an implementation project of a care model to be able to adjust the implementation route if necessary.

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REFERENCES


A survey on job satisfaction among nursing staff
