



Orly Toren^{1*}, Yehuda Tsur¹, Nurit Nirel², Assaf Toker³ and Michal Lipschuetz¹

¹Hadassah Medical Center, Israel

²Smokler Center for Health Policy Research, Myers-JDC-Brookdale Institute, Israel

³Department of Health Systems Management, Faculty of Health Sciences, Ben Gurion University of the Negev, Israel

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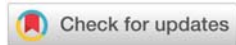
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***Corresponding author:** Orly Toren, Hadassah Medical Center, Israel, E-mail: torly@hadassah.org.il

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Research Article

Nurses' authority in Neonatal Intensive Care Units (NICUs) in Israel- The disparity between policy and Practice

Abstract

Background: Policy implementation is a fundamental aspect in management. This study examined gaps and barriers in the implementation process of governmental policy with respect to the division of responsibility and authority between physicians and nurses.

In this study we aimed to examine the work processes and actual division of labor between physicians and nurses in the Neonatal Intensive Care Units (NICUs) and the disparities between them and the Israeli Ministry of Health policy (MOH) and to examine the attitudes of staff members towards the need for policy change

Methods: A cross-sectional study, conducted among physicians and nurses at 22 NICUs in Israel. 432 recruited (50% rate).

Results: A disparity was found between policy and actual practice. Many of the tasks permitted to RNs by law or regulations are not actually performed by them.

The main barriers for authority implementation are the perceived need for approval by a local level, and a lack of nurses' knowledge regarding the tasks they are permitted to perform.

Almost half of the respondents believe that the division of work between physicians and nurses requires change.

Conclusions: Policy is not fully implemented due to unsuitable regulations to practice processes, lack of knowledge regarding the existed policy and local barriers. There is a need for governmental policy change.

Introduction

Background

Frequent changes in the health care system require a policy re-examination regarding professional boundaries between nurses and physicians. The Israeli Ministry of Health (MOH) policy in recent years increased nurse authority in areas that not long ago were the exclusive domain of physicians. This growing nursing authority is based on international trends of translating professional skills to clinical care needs. This trend also addresses financial constraints, shortage of manpower – mainly physicians – and their availability in specific clinical situations.

When reviewing policy implementation of responsibility and authority among nurses and physicians, it is necessary

to examine these issues and the actual barriers related to the physicians' agreement to hand over certain tasks to nurses, in order to assess whether there is a gap between policy and practice [1-3].

Policy implementation is a fundamental aspect in management and in recent years, many researchers have attempted to ascertain the factors affecting its practical execution. Baradach defines policy implementation as the continuation of the policy-making process by other parties and its conversion into action [4]. The first and a most significant part of policy implementation is decision-making, which is also a complex part of the process. An ideal policy decision, defines the problems, objectives and modus operandi to reach the desired outcome. Ideal conditions for effective policy implementation include a clear definition of the problem and objectives; a clear outline of the process implementation;

allocation of the appropriate resources; ascertaining that those responsible for implementation have sufficient management skills; reducing legal restrictions and creating appropriate financial incentives (and discontinuing other incentives to maintain the status quo); and providing support and training for those professionals whose roles are changing [5].

The gap between policy and implementation does not stem from the amount of an individual's personal responsibility, but from a lack of professional implementation strategies. It is also affected by barriers at the practical, management and decision-making levels.

The term "barrier" describes a factor that inhibits or prevents the achievement of the desired outcome, be it a person, process, institution, procedure, norm, financial status, knowledge, etc. [6]. Not many models were found to describe barriers of policy implementation in health care. Some of the general barriers described in the literature can be related to patients' characteristics (type of illness, demography, socioeconomic background, etc.), care providers (demographic characteristics, training, professional training, and professional approaches), and system (resources, time, organization, work practices, etc.) [7].

Another main barrier for policy implementation is related to the lack of trust and agreement between physicians and nurses regarding areas of responsibility (in practice and in ideal terms). This disagreement is a barrier for authority regulation between the disciplines, resulting only in partial nursing authority development and handover of tasks from physicians to nurses [8,9].

Implementing policy in medicine and nursing

In the Western world, nurse authorities and responsibilities do not necessarily develop due to policy changes, but rather according to changes in circumstances and society needs [4]. During the process of reallocation of authority and responsibility there are certain issues needed to be taken into account [10]. Such issues are related to proficiency of the new provider, training processes, legal constraints etc.

Transferring responsibility of any kind from one profession to the other requires broad support and use of evidence-based directives and protocols. Resources are also required in order to build an implementation plan, which should include assimilation of the processes, cooperation among staff, mutual recognition of various roles, and increasing awareness of the importance of collaboration [8].

Different studies have examined the effect of nurse characteristics on the implementation of policy and acceptance of the new authority [1]. The key characteristics examined were: nurse personalities, management processes, nurse training, certifying procedures and the implementation of the policy by the medical organizations. Successful implementations were linked to practices that were already being conducted and fitted with the workflow [2], commitment from the group taking responsibility for the new task, and the actual need in the field [1,11].

For a successful policy implementation, it is necessary to create a support system at the nursing leadership level, and provide effective assistance for the embedded new tasks in practice [12].

Policy in Israel

Legislation for nursing practice in Israel is based on public health directives and the Physicians' Ordinance [13-15]. These laws are the basis for health care decision-makers to define professional boundaries of nursing practice and to ensure that those providing nursing services are qualified to do so.

Nurses education level sets the extent of practice authority granted to them by law. There are two levels of RNs: the first is Generic level with or without an academic degree; the second is advanced courses (post Basic Education - PBE), specialty courses related to their expertise [16], Neonatal Intensive Care Unit (NICU) is one of them. These courses provide graduates greater authority to practice additional procedures to the generic level after getting a national certification.

The Israeli law has taken into account the developments in medicine and given the director general of the Ministry of Health (MOH) the power to transfer authority from physicians to nurses in specific advanced procedures [13]. These procedures are specified and circulated to all health organizations in detail, and are also published as part of the MOH policy. The list of activities has grown over the years. Some are educated on the generic level, and some are trained in PBE courses, where only graduates of a specific course can perform the relevant task

The NICU as a case study

The duties and authority of nurses in different NICUs vary from country to country. In countries such as the USA, Canada, the UK and Ireland, nurses have a broader role than in Israel, which includes diagnosis, high-risk decision-making and clinical tasks. The nurses' role was developed sometimes to meet patients' needs (USA) and sometimes through planning (Canada). Note that after the role development in Canada, a mechanism was set to examine it in light of needs in the field [10]. Despite the role definitions around the world, there is a certain level of ambiguity in most countries.

In Israel, one of the medical professions suffering a shortage of specialists is neonatology. The division of work between physicians and nurses in these units is based on regulations set out for each profession, namely the duties, responsibilities and authority. The shortage of staff has over the years led to changes in the areas of responsibility and authority (as directed by the MOH, acting as regulator) toward an expansion of NICUs nurse authority. Most of the changes were done without policy formulation that focused on both professions (physicians and nurses), nor did it define the division of responsibility and authority between them.

On the departmental level, there is a shortage of physicians that part of their duties are to care for newborns during complicated deliveries. No mutual education exist to train nurses and young physicians. Depending on the unit, mutual

meetings are held, usually discussing patients care and needs. No meetings are held for improving communication or understanding care process barriers. Most of the management is held separately by the nursing division for nurses, and the unit hospital administration for the physicians.

Rationale

The need to examine policy implementation regarding changes in professional boundaries is inevitable. There has been no methodical examination to understand how this change, or the re-assigning of authorities and responsibilities between nurses and physicians, is perceived by those involved. Nor has there been any survey regarding the current policy of what needs to be done to broaden nurse authority; the likelihood of such steps being taken, or the possibility of its practical implementation.

Moreover, given the complex situation in Israel, where there are several levels in the nursing hierarchy (based on training) and the growing shortage of NICU physicians, it is important to examine to what extent the nurses are exercising fully their authority, whether this allows for a more effective workflow, and if there is a need for change as perceived by the two professions.

Objectives

1. To examine the work processes and actual division of labor between physicians and nurses in the NICUs and the disparities between them and MOH policy, by:
 - a. Documenting implementation of specific practices in the NICUs and the disparity between them and Ministry policy (for the whole staff, for specific activities permitted to all nurses in the unit, and those permitted only to PBE graduates),
 - b. Identifying barriers that create disparities between actual practices and Ministry policy.
2. To examine the attitudes of staff members towards the need for policy change regarding:
 - a. Division of roles based on the current policy and regulations,
 - b. Additional nursing authority and tasks.

Methods

Study design

A case study of different NICUs conducted in two stages. In the first stage, semi-structured in-depth interviews were conducted with 10 physicians who are directors of NICUs along with nine head nurses of those units. The interviews were conducted in order to identify key problems and issues regarding the responsibility and authority of physicians and nurses working in NICUs. The findings from the interviews were used as the basis for developing a closed self-report questionnaire, which was distributed to NICU staff in the

second stage. Data collection was from June 2011 to March 2012.

Settings

Participants: The study population included physicians and nurses working in all NICUs in Israel. Survey respondents numbered 432 (from 22 NICUs participating in the study) – about 50% of the study population. Of these, there were 386 nurses and 46 physicians.

Study Instruments: The self-report questionnaire was based on the literature review along with issues that were brought up in the preliminary interviews. The questionnaire included:

- Demographic variables – profession (nurse or physician); length of time in the profession and seniority (including dates of licensing and specialization); in-service and other training; type of hospital; type of unit; grade/position within the organization.
- Questions about the nature of the work (e.g., the number of daily/weekly hours and whether the position is full- or part-time).
- Questions about tasks performed – the questionnaire included a list of tasks permissible for nurses (divided into those permitted to all RNs and those permitted only to PBE graduates). All respondents (nurses and physicians) were asked to circle the procedure that nurses are permitted to perform, those that they do perform, and if tasks are not performed, to give the reason why not.
- Identification of barriers to tasks performance – a question including listed responses about the barriers (e.g., lack of knowledge/insufficient skill; not approved by the head of department; not approved by the hospital; not approved by the physician on call; not approved by law; don't know).
- Attitudes about the effective division of work between physicians and nurses – 6 statements on the Likert scale (1 = not at all; 5 = to a very great extent).
- Attitudes towards giving nurses in NICUs greater authority to make decisions and perform activities – 4 statements on the Likert scale (1 = not at all; 5 = to a very great extent).

Study Size: Sample size estimation for this study was based on the expected difference between physicians and nurses in their approach to the expanded authority of nurses. Assuming there are 8-times more nurses than physicians in NICUs, the significance level is 5% (two-tailed) and the power 80%, particularly regarding the question to both groups about expanding the nursing's scope of practice to prescribing medications: 66% of the nurses are expected to agree compared to 43% of the physicians [17], a sample size of 40 doctors and 320 nurses would be sufficient to prove that the difference is statistically significant.

Statistical methods

Most of the study findings were expressed using categorical variables and were presented by cross-tabulation. The connection between two qualitative variables was examined both by an χ^2 test and by Fisher's exact test. In order to compare the quantitative variables for each of the independent groups, we conducted a t test. In order to examine the concomitant effect of several independent variables on a dichotomous dependent variable, we used a multivariate logistic regression model using the forward stepwise method. All the statistical examinations were bidirectional and a value of 5% or less was considered statistically significant. All the statistical data were analyzed using version 18 of the SPSS software package.

Ethics committee

We received approval from IRBs Committees in each participating hospital or organization. The study also received approvals from all medical and nursing management of each institution.

Results

Participants

Altogether 432 respondents participated in the survey (Table 1) – 386 nurses (48% response rate) and 46 physicians (46% response rate). The physicians in the NICUs are older than the nurses (40% of the physicians are over the age of 50, vs. 20% of the nurses). About half of the physicians are men, while the majority of nurses are women (97%). Most of both physicians and nurses are married (84% and 82%, respectively) and most are Jewish (91% of the physicians and 84% of the nurses). Most of the nurses were born in Israel (56%), vs. 43% of the physicians. Among the physicians, 80% are seniors and 71% have an academic teaching position (not shown in table). Among the nurses, 97% are registered nurses, three-quarters (75%) are academic nurses and 61% are PBE graduates (not shown in the table). The nurses have been working for an average of 16 years in the profession compared with 20 years among the physicians (not shown in table). The physicians have worked for an average of 15 years in NICUs, compared with 12 years among the nurses (not shown in the table) (Table 1).

Descriptive data

1. Work Procedures and the Division of Labor among Nurses and Physicians in NICUs and the Disparity between Policy and Actual Practice

About 54% of the nurses reported that they perform all procedures permitted by the MOH compared to 71% of the physicians reporting that nurses perform all of the MOH permitted procedures ($p < 0.02$ – not shown in table). Approximately 50% of the nurses and 18% of the physicians reported that in certain situations the nurses are obliged to perform procedures and make decisions that are not in their scope of authority ($p < 0.01$ – not in table).

Tasks that all RNs in NICUs are allowed to perform: RNs in NICUs are allowed to perform nine advanced procedures (specified in Table 2). Less than 50% of them reported that they execute all of them (Table 2). The most commonly performed task is connecting and disconnecting patients to the respirator to extract secretions (49%); this is followed by blood administrations (44%) and peripheral Heparin IV flushes (31%). OTC medication is given by 30% of the nurses.

Despite this MOH policy, the staff reported barriers preventing them from performing all allowed procedures. The barriers are related to the need and/or perceived need for authorization from the institution/head of department/physician (not shown in table). The main activities reported

Table 1: Personal Background of the Physicians and Nurses in Neonatal Intensive Care Units in Israel.

		Total N=432%	Nurses n=386%	Physicians n=46%
Age	Up to 30	13	15	2
	31-40	36	39	13
	50- 41	28	26	44
	51-60	19	17	33
	60+	4	3	7
Sex	Male	8	3	52
	Female	92	97	48
Family status	Married	83	82	84
	Single	11	11	7
	Other	6	7	9
Religion	Jewish	85	84	91
	Christian	6	5	2
	Muslim	5	7	2
	Other	4	4	5
Country of origin	Israel	55	56	43
	Other	45	44	57

Table 2: Percentage of Respondents who Perform Tasks that all Registered Nurses are permitted to Perform.

Tasks as reported to the question "Who performs the following tasks at your NICU?"	Registered nurses N=81%	Post-basic training nurses n=235%	Physicians n=46%
Defibrillation using semi-automatic device	0	1	89
connecting and disconnecting the patients to the respirator to extract secretions	49	63	20
Blood administration by 2 registered nurses	44	39	39
Peripheral Heparin Intravenous flushes	31	69	24
Administer OTC medication	30	17	52
Heparin Flush of central venous catheter and alternative systems	14	50	24
Removal of catheter from central vein	9	23	70
Decision to administer adrenalin in an emergency	0	0	91
Drawing of blood from central lines and alternate systems	5	50	52

by physicians and nurses requiring local approval were administration of blood (64%), administration of OTC medication (56%) and drawing of blood from central lines and alternate systems (50%). No statistical differences were found between physicians and nurses. Two procedures that nurses reported practicing with no need for local approval were connection and disconnection from respirators (65%) and peripheral Heparin IV flushes (48%) (Table 2).

Tasks permitted only to PBE nurses in NICUs: Six advanced procedures have been approved for PBE graduates, most of which are not executed (Table 3). The main two activities performed by PBE graduates are drawing blood from an open arterial line (72%) and administer intravenous push medication (66%). Tasks occasionally performed by them are removing arterial line (36%) and draw blood for blood type (2%). These tasks are more often performed by physicians (68% and 82%, respectively). Although the percentages are small, approximately 9%–16% of the RNs who are not permitted to perform these tasks reported that they are compelled to perform them.

The main barrier to performing part of these tasks is reflected in the perception that most of the respondents believe that they need additional local authorization in addition to the governmental regulation. An additional barrier is related to a lack of knowledge or confusion among nurses regarding what tasks are permitted to RN depending on education level by the regulation.

A lower rate of nurses (4%–22%) compare to physicians (13%–30%) believe they do not need additional local approval to perform these tasks. The task for which there is greatest agreement between the professions is that PBE graduates can administer IV push medication (62%), setting a peripheral vein transfusion (62%) and drawing blood from an arterial line (59%) (not in table) (Table 3).

2. Attitudes of staff members towards the need for policy change

a. Sixty-one percent of the physicians and nurses agree that the current division of labor enables efficient work in the department, and a similar percentage (58% of the nurses and 54% of the physicians) noted that it provides the highest quality of care (Table 4). Almost half of the respondents believe that the division of labor needs to be revised (47% of the nurses and 43% of the physicians), and that it is not suited to the current workload in the unit. Over a third of the nurses and physicians (38%) responded that with the current division of labor, nurses are obligated to refer problems to physicians very often (Table 4).

A similar percentage of physicians and nurses (not shown in table) responded that physicians are interested in expanding the range of tasks performed by the nurses (58% vs. 61% respectively). More nurses than physicians (59% vs. 37%, respectively) responded that the nurses wanted authorization regarding decision-making, but only 42% of them thought that physicians would like to expand their authority in this area. In

Table 3: Percentage of Respondents who Perform Tasks that Nurses with Post-Basic Training are Permitted to Perform.

Tasks as reported to the question "Who performs the following tasks at your NICU?"	Registered nurses N=81%	Post-basic training nurses n=235%	Physicians n=46%
Drawing blood from an open arterial line	9	72	55
Administer intravenous push medication	16	66	50
Set a peripheral vein transfusion in the upper limbs, lower limbs and scalp	16	58	57
Push injection of medication to a catheter in a central vein and alternative systems to vein	10	58	59
Arterial line removal	12	36	68
Drawing blood for blood type and cross match	10	2	82

Table 4: Attitudes towards the Division of Labor between Physicians and Nurses in NICUs.

Response: To a great/very great extent			
Category	Nurses n=369 %	Physicians n=45 %	Total N=411 %
Allows for efficient work in the department	61	61	61
Allows for the best quality care	58	54	58
Requires change	47	43	47
Is appropriate for the nurses' current workload*	32	45	34
Is appropriate for the physicians' current workload	36	44	37
Forces the nurses to refer to the physicians too often, hindering the nurses' work	38	38	38

* p<0.05, represents the Chi squares statistic differences between the groups of response.

addition, when we compared nurses with an academic degree and those without one, we found that an academic education contributes to a nurse's desire for greater authority.

Most of the staff believe that greater authority in decision-making will allow nurses to work more independently and efficiently, with a significant difference between nurses (83%) and physicians (56%) ($p < 0.01$, not shown in table). In addition, most of the nurses and the physicians believe that this would provide a better response in intensive care situations (81% and 67%, respectively), improve quality of care (75% vs. 51%, respectively), and enhance a nurse's sense of empowerment. Despite these positive aspects, most of the staff believe that promoting nursing authority in decision-making would increase their workload (76% vs. 58%, respectively). More than half of the respondents (52%) believe that transferring clinical tasks from the physicians to the nurses is one of the necessary steps to achieve this change (in addition to increased staffing).

b. Staff attitudes towards additional nursing authority and tasks

In light of the findings that show there is a need for change, we examined the views of the staff regarding the changes needed and presented a list of tasks and areas of decision-

making and asked whether each of the items should be part of the work of every nurse, only for PBE nurses, or performed by physicians only. The list included tasks such as lumbar puncture, mechanical ventilation decision making for full sepsis examination and administration of antibiotics.

The findings reveal that there are tasks in NICUs for which there is great agreement among physicians and nurses as to who should (or should not) perform them, with no statistical significant differences between the professions. We used the term «great agreement» when 60% or more agreed about who should perform a task, or, in contrast, when 20% or less agreed that it should not be performed by one or the other professions.

There was overwhelming agreement that physicians should continue to perform their traditional activities regarding invasive procedures such as lumbar puncture (94%) and tracheal intubation (86%), as well as initial examination of healthy newborns (66%) (not shown in table).

For activities to be performed by PBE graduates, we found the following rates of agreement, in descending order: analysis of respiratory measures and deciding on a resuscitation plan (68%), and instructing parents (53%). A slightly smaller percentage agreed about prevention of infection in the unit (47%), discharge from the unit (42%), decisions about giving and discontinuing light therapy (41%), and decisions to call a physician specialist (26%).

With regard to RNs who have not completed PBE training, we found great agreement that they should be responsible for prevention of infection in the department (81%) and discharging patients (64%). There was considerable agreement that they were not to perform a physician's traditional tasks such as lumbar puncture, analysis of respiratory measures and deciding on a resuscitation plan, as well as for the need of antibiotics.

Discussion

The study identifies a disparity between governmental policy regarding permitted advanced procedures for NICU nurses and the actual practice in field; NICU nurses are not actually exercising their full authority in providing nursing care.

One of the reasons for not performing permitted tasks was the organizational barriers that require local approval (from the institution, head of department, or physician). The barriers were either formal (written directives), or perceived by the staff (no written directives). A possible explanation may be due to the unchanged traditional role performance of both nurses and physicians, different social norms and unchanged power relations between the professions [9]. Another explanation may be related to the type of new tasks permitted by the MOH policy. These tasks are more associated with the medical profession and over the years have become established as the exclusive domain of physicians.

Two types of barriers were found preventing nurses to fully perform their scope of practice. The common one is related to

additional training required by the hospital for performance authorization (e.g., blood administrations by two nurses). The other type of barrier is associated with prevention of tasks performance either at the hospital or the unit level. This is due mostly to aspects of time consumption from nurses (e.g., drawing blood). This task in particular is considered simple and technical, but requires a substantial amount of time, and if performed in its full span by nurses, other traditional nursing tasks could be neglected to an extent or not completed at all. Therefore, without additional resources or reallocation of manpower-budget between nurses and physicians, this task is prohibited for nurses to perform by different levels of the nursing administration.

The increasing range of advanced procedures permitted for nurses to perform requires a process of change in professional responsibility. This change demands policy makers to plan and design the implementation, integration, supervision and broad support provided to the authorized profession [18]. In addition, there is an essential need to examine issues related to the safety performance of the new profession; sufficient training and support for the person giving the treatment, and the adequate incentives for each profession as defined by the health system [19].

The MOH policy specifies a list of tasks to be performed by all RNs, and states different tasks authorized for PBE graduates only. The process of adding more tasks to the initial list evolves without prior planning, usually based on requests from specific units or professional leaders. It develops by adding many tasks not necessarily related to one another, which makes it difficult to remember them and leads to a lack of clarity as to who is allowed (or not allowed) to perform what task (which might explain the finding that sometimes nurses perform tasks that they are not authorized to do). May, Sibley & Hunt emphasized that assimilating authority in the field must be associated with tasks that are already being performed and are integrated into the workflow [2]. When the tasks are performed sporadically and are not necessarily part of the overall work process, it is almost impossible to systematically remember everything that is permitted. Indeed, it was found that neither the physicians nor the nurses know precisely what these tasks are. If the policy is to be successfully implemented, uncertainty over who can do what, as reported by NICU staff members in Israel, must be avoided. It is important for policymakers to base policy on clear definitions of needs and objectives. Successful implementation of a policy has to include leaders with sufficient skills at management level, as well as reduction of legal restrictions, creating appropriate incentives, and providing support and training for health professionals whose roles are being changed [5].

It seems the components of a nurse's training and authorizing responsibilities are found to have only partial impact on policy decisions of role expansion. For decades, it was recognized that a positive policy implementation is associated with management processes, nurse training, and a local process of implementing procedures [1]. Therefore, there is currently a need to create a support system at the leadership level as well as effective assistance in the implementation processes of the tasks related to authority expansion [12].

There is general agreement among physicians and nurses that the current division of labor allow for efficient work, enable to provide the best quality of care. A large proportion of the nurses want to have greater authority both in decision-making (60%) and in the range of tasks they perform (45%). Most of the physicians would like to see the nurses' areas of authority expand in the range of permitted tasks and in a lesser extent regarding decision-making. Although both agree that expanding the areas of authority will increase nurse workload. These findings are similar to those found in all Western countries, where most of the staff, physicians and nurses would like to see nurses with more authority [20].

To a statistically significant extent, the nurses believe that increasing their authority will lead to more independent and efficient work and provide a better response to the needs of their patients, particularly those in intensive care. An analysis of the factors that affect these attitudes revealed that an academic education contributes to a nurse's aspirations to increase their authority. This is similar to another study conducted in Israel, which found that nurses are interested in expanding their authority and physicians support this trend [17]. This study also found that academic education was a predictor for a nurse's attitudes.

The findings revealed several areas where there is a broad consensus of physicians and nurses as to the boundaries of both professions. There is a mutual agreement regarding traditional tasks (mostly invasive). These tasks, currently performed by physicians, should remain exclusive purview of the physicians. With regard to activities performed by all RNs, all staff members agreed that they should engage in traditional nursing activities such as preventing infection in the ward and discharging infants.

As for PBE graduates, a high percentage of staff members agree they should perform analysis of ventilation measures and decide about a mechanical respiration plan. About half the staff expressed agreement about parental guidance, clinical care, and discharge from the unit. Respiration skills and expertise are among the areas in the PBE course that are given special attention. In light of the increased number of premature babies on respirators and the extensive use of respiratory treatment in NICUs, it may be assumed the physicians appreciate the knowledge and skills acquired in the course.

With regard to attitudes towards developing new nursing positions, all the staff agreed the tasks traditionally performed by the physicians are in the areas of diagnosis, medical consultation and clinical care. It should be noted that a study conducted in Israel about the duties of physicians and nurses found that the physicians had greater difficulty transferring diagnostic tasks to nurses, while some 45% of the physicians agreed that tasks such as writing prescriptions and outlining treatment could be done by specialist nurses [2].

In conclusion, it is evident that the current MOH policy of broadening nurse authority in NICUs is not being fully implemented, and does not always meet the actual demands in the field for effective action and continuity. Given the lack

of clarity about the purview of the nurses and the need to streamline the work, it is important to examine the following recommendations as the basis for formulating policy that will meet the actual needs and allow more efficient work. It may be assumed that these steps will lead to the recruitment and retention of NICU staff as well as enhance the quality of care in the units.

Recommendations for policy formulation and implementation

Setting the process of policy implementation after assimilation: The MOH policy defines a range of advanced tasks permitted to nurses. To implement policy into practice, it is required to establish control mechanisms to evaluate both implementation processes and practice assimilation.

Authorizing nurses to perform complete procedures rather than disjointed tasks: Part of the authority and activities of the nurses are not based on an entire treatment process, nor are they organized around the principle of continuity of care. This situation causes the nursing intervention to be fragmented with many interruptions in between. Therefore, it is recommended to promote advanced nursing tasks for an entire treatment process, rather than adding sporadic activities.

Removing perceived professional boundaries: Various organizational levels in the hospitals set restrictions of implementing nurse authority and tasks. Many restrictions were set in the past with no ability to reproduce the underlying cause or who gave the order not to perform the task. Therefore, it is important to review the institutionalized restrictions, refresh staff information about permitted activities and enforce compliance.

Channeling nurses with the broadest knowledge to care for the most complex neonates: Nurses with the broadest knowledge should be directed to care for the most complex cases. Nurses with PBE training should be given broader authority, and should provide care for the more complex babies, particularly those in intensive care.

Increase the areas of decision-making and empower the nurses as a basis for a neonatal nurse practitioner position: The structure of NICUs in Israel is mature enough to develop the role of Advanced Neonatal Nurse Practitioner (ANNP). Physicians are willing to transfer certain authorities to nurses, and nurses with academic education show more self-efficacy and motivation to assume greater authority for decision-making. Most of the nurses working in NICUs have at least a bachelor's degree, over half have completed PBE, and have worked for many years in the unit, so it would be relatively easy to promote this group of nurses to ANNP, making the work in NICUs more efficient and relieving the manpower shortage.

Implications for policy makers

- **Policy implementation** - Implementing policy into practice by setting control mechanisms to evaluate both implementation processes and practice assimilation

- **Authorization scope** - policy making authorizing nurses' intervention based on complete procedures rather sporadic tasks
- **Removing perceived professional boundaries** - reviewing institutionalized restrictions and refreshing staff information about permitted activities and enforced compliance
- **Effectiveness and efficiency in staff performance** - Channeling nurses with the broadest knowledge to care for the most complex neonatal cases
- **Increase the areas of decision-making and empower the nurses** - there is a need to develop the role of Advanced Neonatal Nurse Practitioner (ANNP), with willingness of physicians and prepared, motivated nursing staff to enable this change

Limitations

The study involved all the NICUs in Israel, but the response rate was moderate – 50% of the potential study population.

The study does not have details of the characteristics of the non-respondents, which may lead to a selection bias, weakening the ability to compare the respondents' characteristics (e.g., age, gender, tenure) with those of the whole population.

Since the study examined the policy through questionnaires, a recall bias may occur. An observational study to examine the actual policy practice is needed to validate the current study results.

Generalizability

This study, although performed in NICU's in Israel, can serve as a basis for understanding the processes and attitudes of physicians and nurses in different hospital settings and in different countries, as well as policy aspects related to this issue. In order to generalize the results globally, more research is needed.

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References

1. Jones B (2001) Professional regulation: determinants and strategies. *Collegian* 8: 6-9. [Link: https://bit.ly/2SN1ZsI](https://bit.ly/2SN1ZsI)
2. May C, Sibley A, Hunt K (2014) The nursing work of hospital-based clinical practice guideline implementation: an explanatory systematic review using Normalisation Process Theory. *International journal of nursing studies*. 51: 289-299. [Link: https://bit.ly/2Yt7wWe](https://bit.ly/2Yt7wWe)
3. McCarthy G, Cornally N, Moran J, Courtney M (2012) Practice nurses and general practitioners: perspectives on the role and future development of

practice nursing in Ireland. *Journal of clinical nursing* 21: 2286-2295. [Link: https://bit.ly/2Yublcl](https://bit.ly/2Yublcl)

4. Bardach E (1977) *The implementation game: What happens after a bill becomes a Law*. Cambridge, Mass: MIT Press. [Link: https://bit.ly/2Yp4Mxr](https://bit.ly/2Yp4Mxr)
5. Mazmanian DA, Sabatier PA (1983) *Implementation and public policy*. Glenview, IL: Scott, Foresman and Co. [Link: https://bit.ly/2LOUEbg](https://bit.ly/2LOUEbg)
6. Rekhess E, Navot D (2006) Equal Policy and Arab Politics in Israel: Pragmatic and Paradigmatic Barriers. In: Hasson S, Karayanni M, editors. *Arabs in Israel: Barriers to Equality*. Jerusalem: The Floersheimer Institute for Policy Studies 141-162. [Link: https://bit.ly/313radf](https://bit.ly/313radf)
7. Dutton D (1986) Financial, organizational and professional factors affecting health care utilization. *Social science & medicine* 23: 721-735.
8. Jansen L (2008) Collaborative and interdisciplinary health care teams: ready or not? *Journal of professional nursing : official journal of the American Association of Colleges of Nursing* 24: 218-227. [Link: https://bit.ly/2YbwzSG](https://bit.ly/2YbwzSG)
9. Katzman EM (1989) Nurses' and physicians' perceptions of nursing authority. *Journal of professional nursing : official journal of the American Association of Colleges of Nursing* 5: 208-214. [Link: https://bit.ly/32Xm3No](https://bit.ly/32Xm3No)
10. Sibbald B, Shen J, McBride A (2004) Changing the skill-mix of the health care workforce. *Journal of health services research & policy* 9: 28-38. [Link: https://bit.ly/2K2dHg9](https://bit.ly/2K2dHg9)
11. Russell RL (1991) *Are We Asking the Right Questions? In: R GGP, editor. Towards a Discipline of Nursing*. Melbourne: Churchill Livingstone.
12. Watson M, Dobson R (1999) Deregulation and maintaining public safety is it possible? Workshop presentation. Fourth International Conference on the regulation of Nursing and Midwifery Regulation across borders: the peoples health and professional regulation; 1999 2-3rd July; London.
13. Israel Ministry of health (1976) *The Physicians Ordinance (New Version)*, 5737-. 1976.
14. Israel Ministry of health (1981) *The Public Health Regulations (Nursing Staff in Clinics)*.
15. Israel Ministry of health (1988) *The public Health Regulations (Nursing Practitioners in Hospitals)*.
16. Toren O, Picker O (2009) Staff development in the national level, in *Nursing leadership and management in Israeli hospitals*. Jerusalem: Magness 27-41. [Link: https://bit.ly/2GAc7N](https://bit.ly/2GAc7N)
17. Brodsky E, Van Dijk D (2008) Advanced and specialist nursing practice: attitudes of nurses and physicians in Israel. *Journal of nursing scholarship : an official publication of Sigma Theta Tau International Honor Society of Nursing / Sigma Theta Tau* 40: 187-194. [Link: https://bit.ly/313pgJM](https://bit.ly/313pgJM)
18. Balik C (2008) Transferring diagnostic and treatment authority from doctors to nurses in common and non-complicated situations – Why yes? *Medicine and Law (Refuah U'Mishpat)* 38: 81-93. [Link: https://bit.ly/2GAc7N](https://bit.ly/2GAc7N)
19. Bryant-Lukosius D, Dicenso A, Browne G, Pinelli J (2004) Advanced practice nursing roles: development, implementation and evaluation. *Journal of advanced nursing* 48: 519-529. [Link: https://bit.ly/2LJb9FL](https://bit.ly/2LJb9FL)
20. Charlton CR, Dearing KS, Berry JA, Johnson MJ (2008) Nurse practitioners' communication styles and their impact on patient outcomes: an integrated literature review. *Journal of the American Academy of Nurse Practitioners* 20: 382-388. [Link: https://bit.ly/2GAc7N](https://bit.ly/2GAc7N)