ΤΡΙΜΗΝΙΑΙΑ ΕΚΔΟΣΗ
ΤΜΗΜΑΤΟΣ ΝΟΣΗΛΕΥΤΙΚΗΣ Α΄ ΤΕΙ ΑΘΗΝΑΣ

ISSN 1109-4486

ΙΑΝΟΥΑΡΙΟΣ - ΜΑΡΤΙΟΣ 2006 ΤΟΜΟΣ 5 ΤΕΥΧΟΣ 1

# ΤΟ ΒΗΜΑ ΤΟΥ ΑΣΚΛΗΠΙΟΥ



# VEMA OF ASKLIPIOS

JANUARY - MARCH 2006 VOLUME 5 No 1

QUARTERLY EDITION BY THE 1st NURSING DEPARTMENT
OF ATHENS TECHNOLOGICAL EDUCATIONAL INSTITUTION
In cooperation with ION PUBLISHING GROUP



*Σε συνεργασία με τον ΕΚΔΟΤΙΚΟ ΟΜΙΛΟ ΙΩΝ*

# το Βημα του Ασκληπιου

# Vema of Asklipios

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*Περίληψη* **ΣΚΟΠΟΣ: Ο σκοπός της εργασίας αυτής είναι να διερευνηθεί η διαφορά απόψεων μεταξύ προϊσταμένων και υφισταμένων, όσο αφορά την αντίληψή τους για την υπάρχουσα υποδομή και λειτουργία των Ελληνικών χειρουργείων.**

**ΥΛΙΚΟ-ΜΕΘΟΔΟΣ: Το στατιστικό υλικό προέρχεται από τις απαντήσεις 201 ατόμων νοσηλευτικού προσωπικού, που εργάζεται σε 49 χειρουργεία Ελληνικών νοσοκομείων. Δηλ. μελετάται σε νοσηλευτικό προσωπικό χειρουργείων η διαφοροποίηση απόψεων μεταξύ προϊσταμένων και υφισταμένων για τη λειτουργία και την υποδομή των χειρουργείων. Η στατιστική επεξεργασία των στοιχείων έγινε με το στατιστικό πακέτο SPSS και τη δοκιμασία $X^2$ TEST (PEARSON-FISHER'S EXACT TESTS).**

**ΕΥΡΗΜΑΤΑ: Οι απόψεις των 2 ομάδων (προϊστάμενοι και υφιστάμενοι) σχετικά με τα χαρακτηριστικά των χειρουργείων έχουν στατιστικά σημαντική διαφορά ($P<0,05$). Ωστόσο είναι ξεκάθαρο ότι, και οι 2 ομάδες έχουν εξίσου αρνητική άποψη για τις συνθήκες στα χειρουργεία.**

**ΣΥΜΠΕΡΑΣΜΑ: Το προσωπικό των χειρουργείων συχνά εργάζεται σε πολύ εχθρικό περιβάλλον. Και οι 2 ομάδες δηλώνουν ότι βρίσκονται καθημερινά αντιμέτωποι με προβλήματα που σχετίζονται με την έλλειψη οργάνωσης, την κακοδιαχείριση του χρόνου, την έλλειψη επικοινωνίας και την μη εφαρμογή των κανόνων του χειρουργείου.**

***Λέξεις-κλειδιά:*** *χειρουργείο, εργασιακό περιβάλλον, διοίκηση, χειρουργική ομάδα, κανονισμός χειρουργείου*

**CURRENT FEATURES OF OPERATING ROOM INFRASTRUCTURE**

*Abstract* ***Objective:*** **The aim of this study was primarily to identify the differences of opinion between those working in the administration of operating rooms (ORs) and operating room (OR) surgical nursing staff, regarding factors responsible for problems arising from the current infrastructure and functioning of Greek ORs.**

***Methods:*** **This study derives from a questionnaire survey of the opinions of 201 nursing staff working in 49 ORs in Greek hospitals. Respondents were either OR nurse administrators or OR surgical nurses, thereby comprising 2 distinct groups of OR nursing staff. Statistical evaluation was conducted using SPSS (c2-Test, Pearson-Fisher's Exact Test).**

***Results:*** **The opinions between nurse administrators and surgical nurses about current features of OR infrastructure is significant difference ($P<0.05$). It is also clear that both respondent groups hold similarly negative opinions.**

***Conclusions:*** **It is clear that OR personnel work in an often hostile environment and that both administrative nursing staff and surgical nursing staff believe that ORs confront problems in effective organisation, time management, communication, and discipline with regard to OR rules and protocols.theme is attempted.**

***Key-words:*** *operating room or OR, operating theatre, environment, administration, management, team surgery, functioning in OR.*

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## *Introduction*

The hospital operating room employs the services of a large number of hospital staff and any functional problems in the operating room affect all members of the surgical team, regardless of their duties[2,14,18]. Further, the safety and well being of the patient can also be affected.

As the complexity of surgery and the demand for operations increase, it is essential to find ways of making the operating room more functional and human. In general terms, identifying and recording the cause of health service malfunction is a start towards the subsequent modification and improvement of quality of care, productivity, and working conditions. To the author's knowledge, no empirical study exists to quantify and define the infrastructure problems existing in operating rooms. However, researchers have recently reported that hospital staff, including operating room personnel, suffer hardship and low job satisfaction[16].

One of the main roles of those responsible for the administration of operating rooms is problem solving; the significance of the problems confronted being proportional to the size of the operating section, number of operating wards, material infrastructure, operating room staffing, and the types of operations taking place in a particular operating room. Organisation and the application of work practices play a major role in the smooth functioning of the operating room. In this study, variable indices of organisation, work practices, and working conditions in the operating rooms were used to evaluate time management, the application of operating room rules and protocols, and the reasons for breakdown in interpersonal communication leading to conflict in the work environment.

## *Materials and Method*

An anonymous questionnaire seeking opinions on the prevailing working conditions in Greek operating rooms was distributed to the 900 delegates at Panhellenic Conference of Operating Room Nurses.

The 201 respondents were employed in 49 operating rooms in Greece, with 95% employed in State hospitals. Respondents comprised two distinct groups of operating room nursing staff; 29% were employed in administration (head nurses 83%; supervisors, divisional directors, directors etc 17%) and 71% in the operating room as nurses or assistants (instrument assistants, nurses' aides etc). For the purpose of clearly defining the two respondent groups, those in the administrative group have been designated "nurse administrators" and those working in the operating room have been designated "surgical nurses".

The questionnaire was divided into the following categories:

- Documentation and communication in the operating room
- Surgical team dysfunction in the operating room
- Hygiene and safety in the operating room
- Time management in the operating room.

Infrastructure problems in operating rooms were identified from answers given by the respondents, and statistical analysis was used to identify areas of difference of opinion between the two respondent groups. Statistical evaluation was conducted using SPSS ($c^2$-Test, Pearson-Fisher's Exact Tests).

## *Results and discussion*

### Documentation & Communication in the Operating Room (Table 1)

**Documentation:** Although printed forms must be properly completed for the safety and proper functioning of the operating room[17], the majority of both respondent groups (58%-71%) reported that there was no surgeon's card, and 35% of the surgical nurse group reported that there was no instrument check list. Where these forms are available for use, the surgical nurse group reported that the operation information form was not filled out (27%), the surgeon's card was not consulted (5%), and the instrument checklist was not used (12%). Further, 36% of this respondent group reported that they do not count the instruments after every operation.

It is not clear whether the lack of printed forms in operating rooms or lack of administrative supervision can explain the above findings, but this apparent disregard for essential documentation gives rise to serious concerns.

**Communication:** The method of communication used in the operating room during surgery is of great importance and the surgical team should limit their communication to the absolute minimum. Low voices should be used and, if possible, sign language[10]. All members of the surgical team should be especially aware of the right of the patient to dignity and respect, whatever the state of consciousness of the patient[9].

Encouragingly, the vast majority of both respondent groups (73%-81%) reported that sign language is used for necessary communication during operations. Further, when verbal communication is necessary, the use of a "low voice" (92%-94%), or "normal voice" (95%-88%) are reported. However, both respondent groups (67% -60%) report use of a "loud voice" during surgery.

**Table 1. DOCUMENTATION & COMMUNICATION IN THE OPERATING ROOM**

| | NURSE ADMINISTRATORS | SURGICAL NURSES | LEVEL OF SI-GNIFICANCE |
|---|---|---|---|
| | % | % | P |
| I consult the surgeon's card | 38 | 24 | 0.22 |
| I do not consult the surgeon's card | 4 | 4 | |
| There is no surgeon's card | 58 | 71 | |
| I use the instrument check list | 67 | 52 | 0.19 |
| I do not use the instrument check list | 6 | 12 | |
| There is no instrument check list | 26 | 35 | |
| I count the instruments after each operation | 66 | 64 | 0.35 |
| I sometimes count the instruments | 14 | 7 | |
| I rarely count the instruments | 3 | 7 | |
| I always count the instruments after certain operations | 16 | 20 | |
| I fill out the operation information form | 85 | 73 | 0.09 |
| ***For communication in the operating room we use:*** | | | |
| Sign language | 73 | 81 | 0.37 |
| Low voice | 92 | 94 | 0.76 |
| Normal voice | 95 | 88 | 0.37 |
| Loud voice | 67 | 60 | 0.71 |
| Means of communication depends on head surgeon | 78 | 81 | 0.60 |

**Table 2. SURGICAL TEAM DYSFUNCTION IN THE OPERATING ROOM**

| | NURSE ADMINISTRATORS | SURGICAL NURSES | LEVEL OF SIGNIFICANCE |
|---|---|---|---|
| | % | % | P |
| ***I think that the causes of conflict between the members of the surgical team are:*** | | | |
| Breaking of the rules | 32 | 29 | 0.68 |
| No documentation of nursing duties | 56 | 50 | 0.44 |
| Refusal to work | 67 | 52 | 0.74 |
| Illogical demands by doctors | 47 | 57 | 0.21 |
| Salary | 17 | 18 | 0.78 |
| Stress and fatigue | 71 | 81 | 0.10 |
| Lack of technical knowledge | 17 | 21 | 0.45 |
| Poor team communication | 15 | 29 | 0.04 |
| ***There are delays between operations*** | | | |
| Very often | 18 | 21 | 0.09 |
| Sometimes | 41 | 53 | |
| Rarely | 41 | 25 | |
| ***These delays are due to:*** | | | |
| Poor operating schedule | 38 | 48 | 0.20 |
| Poor operating room team co-ordination | 21 | 32 | 0.11 |
| Lack of co-operation with third parties | 41 | 46 | 0.52 |
| Lack of operating room malfunction of elevators | 31 | 23 | 0.25 |
| Lack of supplies and equipment | 27 | 49 | 0.005 |
| Conflict between team members | 17 | 16 | 0.82 |

In the opinion of approximately 80% of respondents the means of communication used during an operation largely depends upon the example of the surgeon in charge. This indicates that the surgeon plays a leading role in establishing the means of communication in the operating room and may be ultimately responsible for eliminating any unnecessary discussion whilst operating[3].

**Surgical Team Dysfunction in the Operating Room (Table 2)**

The vast majority of both respondent groups (71% -81%) reported stress and fatigue as the most common reasons for conflict between members of the surgical team. In addition 15% of nurse administrators and 17% of surgical nurses reported "refusal to work" as a cause for conflict, and 29% of surgical nurses reported that the violation of rules is a cause of conflict. However, the majority of the respondents (56%-50%) reported that there was no documentation of nursing duties. These findings point to a breakdown in the administration of operating room work practice and quantify this as a common problem.

Insubordination has a catalytic effect on the proper functioning of the operating room, because essential rules may be broken and work relationships adversely affected. As employees in Greek State hospitals are public servants and have permanent tenure of employment by law, they cannot be dismissed, and insubordination may also be cultivated by the lack of nursing duty documentation and documentation of the views of management and trade unions. This may result in situations where nurse administrators are threatened by insubordinate nursing staff but have no recourse but to tolerate this[5,6,7].

**Hygiene and Cleanliness in the Operating Room (Table 3)**

A most important aspect of the operating room is hygiene and cleanliness. However, it has been reported that Greek operating rooms do not meet recommended international standards[1, 8].

In many hospitals (45%) soiled linen is taken away in obsolete or in open trolleys from the one and only

**Table 3. HYGIENE AND SAFETY IN THE OPERATING ROOM**

| | NURSE ADMINISTRATORS | SURGICAL NURSES | LEVEL OF SIGNIFICANCE |
|---|---|---|---|
| | % | % | P |
| I believe the operating room is clean | 84 | 77 | 0.33 |
| I believe the operating room is safe | 75 | 62 | 0.13 |
| I believe the operating room is dangerous for infections | 40 | 46 | 0.51 |
| I believe the operating room is dangerous to the life or well-being of the patient | 14 | 21 | 0.41 |
| Soiled linen is removed in trash bags by special laundry trolley | 45 | 49 | 0.55 |
| Refuse is removed in trash bags by special trolley through a special exit | 26 | 20 | 0.32 |
| Careful general cleaning of the operating room is done once a year | 38 | 42 | 0.61 |
| Special cleaning of the operating room is not done every day | 20 | 33 | 0.06 |
| We do not wet-sweep the operating room | 33 | 39 | 0.33 |
| Surgeons' shoes are not washed every day | 54 | 68 | 0.08 |
| Trolley wheels are not washed every day | 73 | 85 | 0.05 |
| Trolleys are not switched at the operating room entrance | 59 | 62 | 0.68 |
| ***The rule for obligatory mask and cap in the operating room is often broken by:*** | | | |
| Surgeons | 39 | 46 | 0.43 |
| Anaesthetists | 74 | 73 | 0.89 |
| Nurses & instrument nurses | 0 | 6 | 0.07 |
| Incinerator stokers & other helpers | 10 | 37 | 0.001 |
| Cleaning staff | 17 | 38 | 0.009 |
| Some people smoke in the operating room | 11 | 9 | 0.78 |

entrance/exit to the operating room and the majority of both respondent groups (74%-80%) reported that refuse is not removed in trash bags by special trolley through a special exit. Further, there was no separation of sterile and non-sterile areas in a lot of operating rooms.

Both respondent groups reported that special cleaning of the operating room is not done daily (20%-33%), and that neither surgeons' shoes (54%-68%), nor the wheels of the trolleys (73%-85%) are washed daily. Further, both respondent groups reported that trolleys are not switched at the operating room entrance (59%-62%) and wet-sweeping is not carried out (33%-39%). Both the nurse administrators and surgical nurses (38%-42%) reported that careful general cleaning in the operating room is done only once a year. Lack of cleaning staff goes some way to explaining these unacceptable findings[5], and the existing poor condition of buildings also contributes to poor hygiene and safety conditions in operating rooms[11]. Nevertheless, 21% of respondent surgical nurses believe that the operating room is dangerous for the life or well-being of the patient.

Attention to restricted areas in the operating room, and the use of protective personal attire by all the members of the surgical team, have been discussed by many authors in the framework of continuous quality improvement for the control of infections[15]. With regard to the obligatory wearing of surgical mask and cap in the operating room, both respondent groups reported that this is often violated by the anaesthetists (74%-73%), surgeons (39%-46%) and, to a much lesser extent, nurses (0%-6%). This rule is also broken by ancillary staff (incinerator stokers, technicians, cleaning staff etc), but this is statistically significantly ($p<0.05$) more often reported by surgical nurses. This probably indicates that nurse administrators are less often in the operating room and therefore do not witness these particular breaches of the mask and cap rule. Further, it is common in Greek operating rooms for the supervisor: staff ratio to be low. This results in less intensive supervision by the head nurse, which in turn results in a less organised operating room. The violation of rules in the operating room by ancillary staff may indicate a lack of awareness of the risk of infection, related to a lack of specific up-to-date information. However, all staff in the operating room, even those with the least patient contact, need encouragement[13] from the head nurse, combined with information and supervision. Nevertheless, it is difficult to understand why more nurses obey the mask and cap rule than either anaesthetists or surgeons.

Doctors who reportedly violate this rule provide a poor role model for other members of the operating room team, who may follow their example. The high rate of violation of rules by doctors could be explained by:

- Over-reliance on the use of antibiotics to combat infection
- Failure to recognise the role of the head nurse as being in charge of supervising the observance of rules in the operating room[12, 19].
- Contempt for the system under which the operating room functions
- Acceptance of a system that is flawed
- Reaction to unsolved problems[4].
- Professional fatigue[17].

However, the reasons for the reported failure of doctors to observe this basic rule of the operating room need more study and the view of doctors should be taken into account, as they are not reported in this paper.

**Time Management (Table 4)**

The vast majority of both respondent groups (59%-74%) reported that "very often" or "sometimes" there are delays between operations and, in the evaluation of time management in operating rooms, the cause for delays resulting in time wasted were specifically identified. Both respondent groups reported that delays are due to poor planning and scheduling of operations (38%-48%), the responsibility for which lies with the head nurse, because the time schedule is the first and foremost function of administration[6].

Poor co-ordination of the operating room team was reported as a cause for delay by 32% of the surgical nurse respondent group. Further, both respondent groups (41%-46%) reported that lack of co-operation from third parties (other departments, clinics, and laboratories) was the cause of delays in the operating room. As an administrative function, co-ordination means mobilising and guiding personnel to expedite the workload and achieve the objectives of the hospital[7]. These findings raise doubts about the cohesion of the surgical team and the administration of the operating room, and indicate serious problems in the administration and productivity of the hospital in general and, consequently, in the operating room.

Both respondent groups (17%-16%) reported that time is also lost in conflict between members of the operating room team. Conflict at work may create intense feelings of displeasure[3,17] but from our findings we came to the conclusion that and blame conflicts between members of the operating room team for lost time.

Both respondent groups (27%-49%) reported that lack of supplies and equipment was a cause for delays. However, fewer nurse administrators than surgical nurses, reported this as a cause for delays. This statistically important difference ($p=0.005$) may indicate that surgical nurses are more directly affected by a lack of supplies and equipment, and that nurse administrators are not aware of the extent of the problem.

**Table 4. TIME MANAGEMENT IN THE OPERATING ROOM**

| | NURSE ADMINISTRATORS | SURGICAL NURSES | LEVEL OF SIGNIFICANCE |
|---|---|---|---|
| | % | % | P |
| ***There are delays between operations*** | | | |
| Very often | 18 | 21 | 0.09 |
| Sometimes | 41 | 53 | |
| Rarely | 41 | 25 | |
| ***These delays are due to:*** | | | |
| Poor planning & scheduling of operations | 38 | 48 | 0.20 |
| Poor operating room team co-ordination | 21 | 32 | 0.11 |
| Lack of co-operation with third parties | 41 | 46 | 0.52 |
| Lack or malfunction of elevators | 31 | 23 | 0.25 |
| Lack of supplies and equipment | 27 | 49 | 0.005 |
| Conflict between team members | 17 | 16 | 0.82 |

As previously mentioned, recognition of a problem is the first step towards modifying working conditions. It would appear that the most common causes for delays in the operating room are directly related to the level of competence of hospital administration, and that the poor infrastructure of the operating room contributes to delays and time wasted.

## *Conclusion*

This study gives a negative picture of the function of some Greek operating rooms today, but the opinions of the two respondent groups are thought to closely reflect reality. It is clear that much work needs to be done to improve the infrastructure of the operating room, in order to improve the level of well-being of the patient, and to improve the working relations, feelings of self-worth, esteem for each other, and job satisfaction of the members of the operating room team.

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