Original Article

# Nursing Students Participation and the Degree of Involvement in Essential Nursing Activities during Their Clinical Practice in Hospital Settings

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**Abstract**

**Introduction**: Clinical practice education is considered a vital component of the education of health science students. However, critical shortage of fieldwork placement experiences has led to unmet students' expectations and clinical learning objectives.
**Aims**: To evaluate the frequency of nursing students' involvement in nursing activities during their clinical practice and to assess the factors that may act as barriers or facilitators to their degree of involvement.
**Methodology**: A cross- sectional study was conducted in a sample of 205 nursing students with the use of a questionnaire including items covering routine basic nursing activities and examining the degree of student involvement (performance or observation). Eight particular nursing activities were selectively included considered as representative of the routine nursing work and the level of student clinical competence.
**Results**: Students were more actively involved in ECG performance (91%), pulse rate measurement (91%), subcutaneous drug injections (92.5%) and saline intravenous administration (91%). Interestingly, the year of studies was highly related to the degree of involvement in the main nursing activities; third and last year nursing students were found to be more actively involved in vital signs assessment, drug administration and injections' performance. Moreover, higher involvement rates were ascertained in students attending Emergency Nursing.
**Conclusions**: Clinical education during nursing studies is an ongoing process. The degree of nursing students' involvement in a wide range of nursing activities is related to the year and the discipline of nursing studies. The role of different educational models in student participation in clinical nursing procedures needs further research.

**Key words:** nursing education, nursing skills, practice placement

## Introduction

Clinical practice is an essential component of the undergraduate nursing education, accounting for ~50% of the entire educational experience (Warne et al., 2010). Among many other goals (e.g. learning the nursing routine, familiarizing with the workplace, developing problem-solving strategies and relationships with staff and patients), clinical practice aims to the acquisition of competence in undertaking and fulfilling particular basic nursing skills such as intramuscular (IM) or intravenous (IV) therapy, monitoring of patient vital signs etc (Chapman and Orb, 2000; Mannix et al., 2006; Croxon and Maginnis, 2009).

The effectiveness of clinical practice has been extensively studied; influencing factors have been identified, several concerns and questions have been raised and various suggestions and aspects have been presented (DEST, 2005; Mannix et al. 2006; Longley et al., 2009; Croxon and Maginnis, 2009; Papastavrou et al., 2010). A central question on the issue is whether students are actively involved in the implementation of basic nursing activities or are confined (in a large part) to a simple observation, i.e. whether the "theory-practice gap" is actually existing (Longley et al., 2007; Papastavrou et al., 2010). Another issue is the degree of improvement regarding the active involvement (and the overall learning experience) with the progress of the undergraduate program (from the earlier to the later semesters or years) which is an optimal educational goal albeit with potential drawbacks (Mannix et al., 2006). The potential existence of differences in active involvement among students attending various modules could be another raising question, requiring answer.

The current study aims to explore these questions through students' view -as their opinion is considered vital (O'Flanagan et al., 2002; Mannix et al., 2006; Henderson et al., 2012), thus obtaining a better picture of the degree of student involvement in basic nursing activities. In specific, the study aims to evaluate: 1) the proportion of students' undertaking and fulfilling or participating in the basic nursing activities during their clinical practice 2) the effect of year of studies and nursing discipline on student participation and involvement in nursing activities.

## Methods

### *Nursing studies in Greece- A short overview*

This study comes from the Nursing Department of the Technological Educational Institute of Athens (Greece). The curriculum of studies comprises of four full-time years where nearly half of the courses are practical or laboratory. The nursing practical modules are carrying out as a clinical training and practice in hospitals and health centers and reach nearly 85% of the overall program. The clinical training is a part of the joint nursing courses and mainly aims at learning the basic and some (or common) specific nursing interventions (e.g. administering IV fluids, performing intramuscular injection, etc.), their facilitation and implementation in practice as well as non-invasive interventions (e.g. taking vital signs, completing patient chart, etc.).In the final semester, prior the graduation, students are appointed on a trainee placement in the hospital, which lasts for 6 consecutive months of 35 hours of practice per week.

### *The sample*

The study was conducted in students of the nursing department attending Medical and Surgical Nursing (a second year lesson) and Emergency Nursing (a third year lesson). These modules have a composite structure including theoretical, laboratorial and clinical component. Clinical practice is taken place in the five major hospital of Athens. Students were asked to complete a properly designed questionnaire at the end of the Spring semester of the academic year 2011-12. The questionnaire was administered in a way establishing anonymity, confidentiality, voluntary participation and full information of students.

### *The instrument*

The questionnaire included items covering routine basic nursing activities qualitatively examining the degree of student involvement (performance or observation). Thus, in their answers students were asked to choose between the following options: "I was only observer", "I did the activity (without help)". Eight (8) particular nursing activities were selectively included considered as most basic and representative of the routine nursing work and the level of student clinical competence; blood pressure (BP), pulse, blood sampling,

intramuscular (IM) injection, subcutaneous injection, vein catheterization, intravenous (IV) administration and electrocardiogram (ECG).

The questionnaire was initially developed by the authors. The design, structure and the included items were based on authors' educational and professional experience, allowing the identification of specific issues requiring exploration. The instrument was reviewed by an expert panel of academic members of the nursing department and members of the Hellenic Nursing Society and it was then revised according to their comments. The final form of the questionnaire was determined following a pilot study conducted in a small number of students. Literature methodology following a quantitative approach in data collection and presentation (in the form of Likert's scale responses) was not adopted - considered rather inappropriate for this specific issue (demanding a clear depiction of the proportion of student active involvement in essential nursing activities).

***Statistical analysis***

The collected data were classified by year of studies (second, third, forth) and by attending lessons (Medical and Surgical Nursing –MN and SN, Emergency Nursing - EN). However, in the subsequent analysis the answers of second year students were compared to those of their third and forth year colleagues - taken together. Given that a considerable part of the clinical practice begins in the second year (according to the current educational undergraduate program) the comparison of students with two years educational experience with those studying for a longer period ("junior vs. senior") was considered a meaningful approach. The distribution of performance of each particular examining activity among the various categories was analyzed using chi-square ($X^2$) test with Yates correction (when necessary), appropriate for categorical comparisons. Moreover, the comparison of the mean values of student answers for all eight activities between years or disciplines was conducted with the use of the same tests, as the particular data were converted into categorical by expressing them as proportions [percentages] of the comparing groups. All tests were two-sided and P value <0.05 was considered as significant. The study was approved by the Nursing Department of the Athens Technological Educational Institute.

**Results**

A total sample of 205 students (25 males and 180 females) accounting for the 74% of the whole study population registered for the aforementioned clinical modules (n=277) participated to our study. Thus, the convenience sample could be considered representative of this population, although higher respond rates have been reported (Kim, 2007; Croxon and Maginnis, 2009; Papastavrou et al., 2010). Moreover, that the recorded proportions of the responders by lessons were similar to the corresponding proportions of the registered students (**Table 1**) furthermore supports the representativeness of the sample.

Numbers and percentages of students reporting performance of the examining nursing activities are shown in Table 2. A variation within a range of 58% (for blood sampling) and 92.5% (for subcutaneous injection) was noted, whereas the average (mean) percentage (for all eight activities) was 84%. The proportion of students reporting lack of either performance or observation of the examining activities was very low (<3%) without significant variation among the various student groups (years or disciplines).

Comparison of student answers by year of studies (Table 3) revealed a significantly higher proportion in carrying out particular activities (IM injection, IV administration, pulse taking) for senior students (third and forth year), compared to second year students (89% vs. 77%, p=0.03, 83% vs. 67%, p=0.01 and 94% vs. 84%, p=0.03 respectively). In contrast, the proportions of 2nd year students reporting performance of blood sampling and ECG was higher than that reported by senior students (70% vs. 53%, p=0.02 and 96.5% vs. 89%, p=0.09).

As indicated in Table 4, the recorded frequency of performance was found higher among EN students than among those attending MN and SN for six of the eight examining activities, whereas it was almost similar for vein catheterization and lower for ECG. The observed differences were significant for BP (p<0.01), IM injection (p=0.02) and IV administration (p<0.01). Finally, with the only exception of IV administration performance which was ascertained in a significantly higher proportion among men than among women (88% vs. 77%, p=0.049), there was lack of any other difference by gender.

**Table 1. Participants' main characteristics**

| | N | % |
|---|---|---|
| **Nursing discipline** | **Responders / Registered** | **Responders / Registered** |
| Medical-Surgical Nursing | 137/186 | 66.8/67.0 |
| Emergency Nursing | 68 / 91 | 33.2 / 33.0 |
| **Student Year** | **Responders** | **Responders** |
| Second | 57 | 28.0 |
| Third | 92 | 45.0 |
| Fourth | 56 | 27.0 |
| Total | 205 | 100 |
| **Gender** | **Responders** | **Responders** |
| Male | 25 | 12.0 |
| Female | 180 | 88.0 |

**Table 2. Frequency of participation to nursing procedures**

| | N | % |
|---|---|---|
| Blood sampling | 118 | 58.0 |
| Intravenous drug administration | 161 | 78.5 |
| Blood pressure measurement | 174 | 85.0 |
| Intramuscular injection | 176 | 85.5 |
| Saline intravenous administration | 187 | 91.0 |
| EGC | 187 | 91.0 |
| Subcutaneous drug injection | 190 | 92.5 |
| Pulse rate measurement | 187 | 91.0 |
| Mean value for all eight activities | 172.5 | 84.0 |

**Table 3. Frequency of participation to nursing procedures according to the year of studies**

| | 2nd year nursing students (N=57) | 3rd or 4th year nursing students (N=148) | |
|---|---|---|---|
| | n (%) | n (%) | p-value |
| Blood sampling | 40 (70.0) | 78 (53.0) | 0.02 |
| Intravenous drug administration | 38 (67.0) | 123 (83.0) | 0.01 |
| Blood pressure measurement | 47 (82.5) | 127 (86.0) | 0.36 |
| Intramuscular injection | 44 (77.0) | 132 (89.0) | 0.03 |
| Saline intravenous administration | 54 (95.0) | 133 (90.0) | 0.27 |
| EGC | 55 (96.5) | 132 (89.0) | 0.09 |
| Subcutaneous drug injection | 51 (89.5) | 139 (94.0) | 0.28 |
| Pulse rate measurement | 48 (84.0) | 139 (94.0) | 0.03 |
| Mean value for all eight activities | 47.1 (82.7) | 125.4 (84.7) | 0.74 |

**Table 4. Frequency of participation to nursing procedures by nursing discipline**

| | Medical-Surgical Nursing (N=137) | Emergency Nursing (N=68) | |
|---|---|---|---|
| | n (%) | n (%) | p-value |
| Blood sampling | 78 (57.0) | 40 (59.0) | 0.8 |
| Intravenous drug administration | 100 (73.0) | 61 (89.5) | <0.01 |
| Blood pressure measurement | 109 (80.0) | 65 (95.0) | <0.01 |
| Intramuscular injection | 112 (81.5) | 64 (94.0) | 0.02 |
| Saline intravenous administration | 125 (91.0) | 62 (91.0) | 0.99 |
| EGC | 128 (93.5) | 59 (87.0) | 0.11 |
| Subcutaneous drug injection | 126 (92.0) | 64 (94.0) | 0.65 |
| Pulse rate measurement | 122 (89.0) | 65 (95.0) | 0.12 |
| Mean value for all eight activities | 112.5 (83.0) | 60 (88.0) | 0.26 |

## Discussion

The current study focused on the active student involvement, particularly on the undertaking and completing certain basic nursing activities. Our findings showed that the recorded rates of performance were found higher than 78,5% for almost all activities and the average (mean) percentage of the eight examining activities was 84%. However, the recorded percentage particularly for blood sampling was evidently lower (58%). This divergence could be attributed to established hospital procedures regarding this particular activity (undertaken by laboratory stuff or interns and/or taken place too early in the morning - before students' appearance).

The observed pattern of differences in the performance of nursing activities by year of studies was not monotonic (instead, it was dual); for activities considered either as relatively more demanding (IV administration, subcutaneous injection) or particularly common (pulse, IM injection) the ascertained preponderance of senior students could be explained by the probably more practicing opportunities offered to them (as anticipated to their longer educational experience). By contrast, the observed predominance of the second year students in carrying out blood sampling and ECG (also very common activities) may be related to their higher enthusiasm and tendency for active participation.

Data analysis by lesson indicated higher proportion of performance among students attending EN for most of the examining activities. The preponderance of EN students in performing particular activities (BP, IM injection and IV administration) was statistically significant, implying increased opportunities in skill practicing provided by this class. That among EN students, the percentages of performance of all activities (with the only exclusion of blood sampling) ranged consistently between 90 and 95% furthermore supports this concept.

The detection of disparities between students of different years regarding their view for various aspects of clinical education has been also reported by others. The finding of higher score in the answers of younger students (specifically regarding supervision evaluation) was attributed to the -possibly- greater attention they had from their supervisors (Papastavrou et al., 2010). However, in the same study there was no difference in student view among the various hospital departments (Medical, Surgical etc.).

The detection of a considerable proportion of students reporting lack of performance of essential nursing activities (average percentage 16%) is a matter of concern, as it disputes the efficacy of clinical practice. However, similar proportions of students expressing dissatisfaction about their clinical education have been recorded in nine European countries (Wayne et al., 2010), whereas criticizing views have been also reported by students of other health professions (Brown et al., 2011) and medical students as well (Birden et al., 2013).

The effectiveness of clinical nursing education - probably the principal determinant of nurses'

professional competence (DEST, 2005; Mannix et al., 2006; Croxon and Maginnis, 2009; Warne et al., 2010)- is chiefly depended on the maximum level of student participation in various nursing activities, particularly those relating to clinical skill development. However, student involvement is often limited to simple observation of essential activities undertaken and performed by stuff nurses. Moreover, in some wards students are largely occupied carrying out some necessary -albeit less demanding- activities (e.g. bed making). These phenomena have been attributed to a variety of factors related to the staff of the wards where students have been placed (staff shortage, workload, insufficient time, potential unwillingness and inadequate level for educational role) (Chapman and Orb, 2000; O'Flanagan, 2002; DEST, 2005; Papastavrou et al., 2010). More general educational problems, such as limited academic time (13 weeks per semester) and frequent student rotation in the various clinical settings may be also responsible (Mannix et al., 2006).

From educational aspect, the emerging existence (even in part) of a theory-practice gap, as suggested by the findings of this study (highlighting some weak areas of clinical practice) renders a number of issues requiring intervention, improvement of student supervision, less frequent rotation and longer staying in a particular placement - allowing student adjustment and integration in the clinical environment (Mannix et al., 2006; Warne et al., 2010). Moreover, a more gradual progress of clinical practice during studies time along with optimal selection of the proper hospitals for each step of this process is likely needed (Mannix et al., 2006). Other issues, including potential extension of the academic year -at least for fourth year students- and the improvement of students' assessment (Helminen et al., 2014) should be also examined.

A potential limitation of the current study is the sample size; although larger than other relevant studies (Chapman and Orb, 2000; O'Flanagan, 2002; Pearcy et al., 2004; Kim, 2007; Croxon and Maginnis, 2009) is rather modest (from statistical aspect). Consequently, the documentation of further -potentially existing- differences regarding particular examining activities (e.g. vein catheterization, subcutaneous injection) was possibly hampered by the rather insufficient size of the comparing student subgroups. Also, the lack of questions examining quantitative parameters (e.g. number of performed IM injections) may represent another limitation, although the accuracy of answers for such questions could be disputed.

On the other hand, the focusing on particular basic nursing activities (to our knowledge, this is the first Greek study on the issue), the multi-center and multi-year origin of the student sample -consistent with other large studies (Saaricoski et al., 2002; Papastavrou et al., 2010)- along with the detection of disparities existing among students of different years and classes, represent strengths of this exploratory study allowing some preliminary (at least) conclusions. Their validation and generalization requires further investigation in larger samples, preferentially multi-institutional.

Conclusions: this study indicated a relatively high (although not optimal) proportion of performance of almost all basic nursing activities along with significant differences of this performance among students of various years and disciplines. The interpretation of those findings could be a useful tool in the elaboration and design of strategies improving clinical nursing education.

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