# Knowledge and Attitudes from Healthcare Professionals toward to the Computers

**D. Tsoromokos[1], E. Harami[2], Z. Dermatis[1], A. Lazakidou[1]**

## Abstract

The purpose of this study is to investigate the knowledge and attitudes of health professionals on the use of computers. Also objectives of this research are to compare the level of attitude towards the implementation and use of computer among the three groups of health professionals (doctors, nurses and administrative staff) and to investigate the factors that shape the attitude. The survey involved 300 Healthcare Professionals from the General Hospital in Laconia. For the collection of data used in the questionnaire Nurses Attitudes Toward Computerization (NATC) of Brodt & Stronge (1984). Medical and nursing staff had on average a lower average price than that of the administrative staff regarding the substantial contribution of Hospital Information Systems (HIS) in the provided quality care to the patient. The nurses had higher average price than that of the medical and administrative staff remained at the same level in the proposal that the use of computers reduces costs and workload. All Hospital Health Professionals averaged mean value at the same level as for the proposition that the use of computers as a danger to the loss of jobs and that is a threat to employment. Medical and nursing staff had on average a lower average price than that of the administrative staff regarding the use of computers offers more possibilities for the staff of the institution and increases efficiency. Finally, the average number of responses given by all health care professionals had an average mean at the same level as for the proposition that the use of computers increases legal liability of staff. Health professionals do not believe that the hospital will benefit from using the computer, they believe that the use of computer should not cause a loss of jobs, there is increasing legal liability of staff from using the computer, and showed that provide quality care to the patient and that there is an increase in profitability and staff possibilities of using the computer. Furthermore, the age, total years of working experience, the date of receiving diploma, computer knowledge, experience in the use of computers in general and at work and the total number of years of work are factors that influence the attitudes of health professionals towards computers.

[1]University of Peloponnese, Faculty of Human Movement and Quality of Life Sciences, Department of Nursing, Sparta, Greece.
[2]General Hospital of Lakonia, Nursing Unit Molai, Department of Obstetrics – Gynecology, Molai, Greece.

## 1 Introduction

Healthcare information systems allow the automation of internal processes of a health unit [2]. It is impossible to introduce a health information system in an organization without its manpower feel the impact of change [3]. A system will be unable to ever reach its potential, if the attitudes of health professionals (eg nurses) toward acceptance and utilization are not known [4]. According to Fishbein & Ajzen «attitude is general and enduring favorable or unfavorable feeling of an object, event or situation that precedes the behavior and can change over time" [5]. The study of the attitudes of nurses towards computers began in late 1960. The investigators considered whether the behaviors assessed adequately, then it could be possible to develop strategies to support nurses who were less willing to accept computers for computerization [6]. It is therefore important to assess the attitudes of nurses working with computers to ensure that they will accept them most favorable [7]. Undoubtedly the positive attitude of nurses which are the largest group of workers at the hospitals can help in direct advancement of automation [8].

According to Cork RD. et. al., many factors influence the doctors in the use of computers, including personality characteristics, specialty, previous computer usage experience, and their attitudes toward computers and medical informatics [9]. Beatty found that one of the main factors for the reduced import of such systems within the hospitals is the attitude measurement failure and user expectations toward the possibilities afforded by computer systems [10]. The Health Professionals attitude for the computers may be included in the broader attitude toward any technological system [11].

Generally, the acceptance and use of technology by a user appears limited in some cases, and this is because of the fear of technology, resistance to new technologies, lack of understanding of the importance of technology, lack of incentives for technology adoption and the low quality of the technology [11].

Besides the explanation of the reason why people accept or reject the computers, has proven one of the most challenging issues in the research of information systems [12].

The purpose of this study is to capture the knowledge and attitudes of health professionals on the use of the computers. In addition, aim of this work is to compare the level of attitude towards the implementation and use of the computers among the three groups of health professionals (doctors, nurses and administrative staff), and to explore the factors that shape this attitude. Furthermore, the purpose of this work, is to explore the attitudes of health professionals about whether the use of the computers space Hospital improves care provided to the patient, increases the benefit to the hospital, is a threat to the work of health professionals, leading to increased efficiency and capabilities of staff and finally if there is any increased liability of staff.

## 2 Material and Method

### 2.1 Sample and Data Collection

Completion of the questionnaires took place during the period from April to July 2013. The survey was conducted at General Hospital of Laconia. Specifically, the total staff of the General Hospital Laconia employs 500 professionals of Health, of which 144 belong to the medical staff, 204 nursing and 152 in administrative. In this study, the total sample of 300 health professionals and especially the 90 respondents are doctors, 108 are employed as nurses and 102 in administration. Therefore, the overall survey response rate was 60%. The response rate was 62.5% doctors, nurses was 52.9% and 67.1% administrative staff.

### 2.2 Statistical Analysis

In this study, examined and detailed the descriptors of variables. We used the basic position and dispersion measures and the frequencies and relative frequencies to describe the demographic characteristics and the questions about capturing the knowledge and attitudes of health professionals towards the use of the computers.

Then for benchmarking attitudes among the 3 groups Health Professionals towards the use of hospital information systems, analysis of variance was applied in one direction (ANOVA F-test). For the statistical correlation of attitudes of health professionals towards the use of Hospital Information Systems with basic demographic characteristics, analysis of variance was applied in one direction (ANOVA F-test), comparing the mean between two independent samples (t-test) and calculated the correlation coefficient of Spearman r. Finally, the statistical correlation of attitudes of health professionals towards the use of Hospital Information Systems prior knowledge in using the computers, made by comparison of the mean between two independent samples (t-test) and by calculating the Spearman's rank correlation coefficient r.

The p-value which indicated based on contralateral controls. The results observed significance level of $p < 0.05$ were considered statistically significant. To perform the statistical analysis used the SPSS software (SPSS Inc., 2003, Chicago, USA).

## 3 Results

It is presents the descriptive data on the demographic characteristics of participants according to their job (medical, nursing and administrative staff). Figure 1 shows that the majority of physicians (33.3%) and nurses are aged 31-40 years, while the majority of administrators (44.1%) are aged 41-50 years. Moreover, the application of statistical control seems that there is a statistically significant correlation between the health professional and the age distribution ($p < 0.001$).

Regarding gender, in figure 2, the majority of doctors are male (66%), while most nurses and employees in administration are women (90.7% and 65.7% respectively). The application of statistical control seems that there is a statistically significant correlation between the health profession and gender ($p < 0.001$).

Also, doctors (43.3%) and nurses (44.4%) in the majority of them, have a work experience to 10 years, while the administrative staff (39.2%) experienced at the site from

21 to 30 years (figure 3). The correlation between the health profession and years working experience is statistically significant (p <0,001).

In figure 4, the majority of physicians (50%) have a senior title university degree and nurses (44.4%) a Technological Educational Institute degree. On the other hand, workers who belong to the administrative staff, say that the majority of them (38.2%), have "other" degree. The application of statistical control seems that there is a statistically significant correlation between the health profession and level of education (p <0,001).

The 60% of physicians and 49.1% of nurses were taken their qualification after 2000, in contrast with 52% of the administrative staff who graduated before 1990 (figure 5). The correlation between the health professional and the chronology of making most recent qualification is statistically significant (p <0,001).

Below, we present the questions descriptive statistics for the knowledge of the computers, by occupation. The Figure 6 shows that doctors and nurses have been taught the computers during their basic training to more percentage than administrators. From the statistical control seems that there is a statistically significant relationship between the profession and the courses for the computers in basic education of participants (p = 0,011 <0,05).

Regarding to the experience in the use of the computers generally, in figure 7, there seems no difference depending on the profession (p <0,05). On the other, doctors (85.6%) and administrators (80.4%) have experienced in the use of the H / PC to work, at a higher rate than that of nurses (57.4%). From the statistical control seems that there is a statistically significant relationship between the profession and experience in the use of the computers to work (p <0,001).

From all the health professionals who use the computers to work (figure 8), the majority of physicians and nurses experienced up to 10 years, while the majority of administrative (47.6%) experienced between 11 and 20 years. The statistical analysis reveals a statistically significant relationship between the profession and the years of experience in the use of the computers to work (p <0,001).

The majority of physicians (72.2%) and nurses (53.7%) work in total in the hospital up to 10 years. In contrast, years working experience for administrators seem evenly distributed among all the years of work experience. From the statistical control seems that there is a statistically significant relationship between the profession (figure 9) and the years of experience in this hospital (p <0,001).

Furthermore, the majority of physicians (70%) and nurses (78.7%) work in total in this segment up to 10 years. Figure 10 In contrast, the years working experience for administrators, in this part seems mainly shared between work experience 0-10 years and 11-20 years. From the statistical control seems that there is a statistically significant relationship between the profession and the years of experience in this part of the hospital (p = 0,001<0,05).

To study the research hypotheses of this study we used concrete proposals from the total questionnaire "Attitudes of Health Professionals towards the implementation of Hospital Information Systems" for the composition of the individual scores. Thus, the calculated sum of the relevant proposals emerged five different scores that characterize the attitudes of health professionals towards the use of the computers. In particular, these scores relating to "providing quality care to the patient by using the computers ", the "benefit of the hospital by using the computers ", the "reduction of jobs by using the computers to the hospital" to "increase efficiency and staff capabilities" and "increase the legal responsibility of personnel by using the computers ". Here are the basic descriptive

measures position and dispersion of various scores for the entire sample. To be comparable, divided by the number of questions from which they are composed. Table 1 shows that the mean scores ranging from the value of 2.5 (the benefit of the hospital) to the value of 3.8 (increase efficiency and staff capacity). This means that healthcare professionals are on average "from uncertain to disagree" that the use of the computers bring job losses (2.7), "disagree" about whether the hospital has the benefit of using the computers (2.5 ), is on average "from uncertain up to agree" that there is increased legal liability of staff from using the computers (3.5), while that on average "agree" that quality care provided to the patient by using the computers (3.7) and "agree" that there is an increase in profitability and personnel possibilities of using the computers (3.8).

For benchmarking attitude among the 3 groups Health Professionals towards the use of hospital information systems were checked existence of a significant difference of the mean of the responses of the sample participants. Table 2 For this analysis of variance was applied in a direction (ANOVA F-test). Below, the results of the investigation of the main assumptions of this study are presented in detail.

## 3.1 Correlation of Attitude towards the use the Computers with the Demographic Characteristics - age

It seems that there is a statistically significant difference in mean scores of "job losses" among age groups (F = 3,809 and p = 0,011 <0,05). Specifically, health professionals over 50 seem to agree on a larger percentage on average compared to younger health professionals that using the computers can be lead to a reduction of jobs (Table 3). As for the correlation of age with the score remaining, disclose no statistically significant correlation (p> 0,05).

## 3.2 Correlation of Attitude towards the use of the Computers and Sex

It seems that there is no statistically significant difference in the average price of five attitudes scores between men and women (p> 0,05).

## 3.3 Correlation of Attitude towards the use of the Computers and Total Years of Service to the Profession

The audit shows that there is a statistically significant correlation of scores of "job losses" and work experience (Table 4). Specifically, the more years of service to the profession, the participants felt that the use of the computers leads to a loss of jobs and that pose a threat to their work (r = 0,137 and p = 0,018 <0,05). As for the other scores the attitude of health professionals were not found to be significantly associated with work experience (p> 0,05).

## 3.4 Correlation of Attitude towards the use of the Computers and the Level of Education

There is no statistically significant correlation of individual scores that represents the attitude of health professionals towards the use of the computers and the upper qualification acquired by participants (p>0,05).

### 3.5 Correlation of Attitude towards the use of the Computers and the Date of obtain the latest Degree

The audit shows that there is a statistically significant correlation of scores of "job losses" and the date of obtain the latest degree (Table 5). Specifically, the more recent the last degree obtained, participants do not consider that the use of the computers leads to the loss of jobs and that it isn't a threat to their work (r=-0,200 and p=0,001<0,05). Furthermore, the more recent the last degree obtained, participants felt that the use of the computers leads to increased legal liability of staff (r=0,160 and p=0,006<0,05). Regarding to the other scores which represent the attitude of health professionals, were not found to relate significantly with the acquisition date of the last degree (p> 0,05).

### 3.6 Correlation of Attitude towards the use of the Computers with the Knowledge of the Computers

These health professionals who had done computers courses during their basic training disagree on average longer than those who did not receive lessons regarding the job losses due to the use of the computers and the result is statistically significant (t-test=2,340 and p=0,02<0,05). In addition, participants who did computers lessons during their basic education agree on average longer than those who did not receive lessons on increasing staff efficiency due to use of the computers and the results are statistically significant (t-test=2,289 and p=0,023<0,05). The same happens when considering raising the legal liability. Professionals who were doing computers lessons during their basic training, they agreed on average a greater extent, that the use of the computers increases legal liability of staff and the results are statistically significant (t-test=2,577 and p=0,010<0.05). Table 6

### 3.7 Correlation of Attitude towards the use of the Computers and the Experience they already have in their use General

These professionals who skilled in the use of the computers generally have a positive attitude (Table 7) regarding to the use of the computers for providing quality care to the patient and the results are statistically significant (t-test=2,951 and p=0,003<0,05). In contrast, participants with experience in using the computers generally do not consider that the Foundation will benefit from the use of the computers and the results are statistically significant (t-test=3,631 and p<0,001). People with experience in using the computers generally disagree with the reduction of jobs due to the use of the computers and the results are statistically significant (t-test=2,835 and p=0,005<0,05). In addition, participants with experience in using the computers generally agree on average longer than those who do not have relevant experience on increasing staff efficiency due to use of the computers and the results are statistically significant (t-test= 3,822 and p <0,001). The same happens when considering raising the legal liability. All professionals who have experience in using the computers generally agree on average a greater extent that the use of the computers increases legal liability of staff and the results are statistically significant (t-test=2,865 and p=0,004<0,05).

## 3.8 Correlation of Attitude towards the use of the Computers and the Professionals Experience in the use of the Computers at Work

Those who have experience in using the computers at work, have a positive attitude regarding to the use of the computers (Table 8) for providing quality care to the patient and the results are statistically significant (t-test = 3,103 and p = 0,002<0,05). In contrast, participants with experience in using the computers to their work do not consider that the hospital will benefit from the use of the computers and the results are statistically significant (t-test=2,645 and p=0,009<0, 05). In addition, participants with experience in using the computers to work, agree on average longer than those who do not have relevant experience on increasing staff efficiency due to use of the computers and the results are statistically significant (t-test=2,529 and p=0,012<0,05). For the scores listed in reducing jobs and increasing legal responsibility for use of the computers does not show a statistically significant difference between the attitudes of people who have experience or not to use the computers at work (p>0, 05).

## 3.9 Correlation of Attitude towards the use of the Computers and the Total Number of Years dealing with the use of the Computers to Work

The audit shows that there is a statistically significant correlation of scores of "quality care to the patient" and the total number of years engaged in using the computers to work (Table 9). Specifically, as many years engaged in the use of the computers in their work, the more they find that using the computers bring quality care to the patient and the results are statistically significant (r=0,138 and p=0,042<0,05). Regarding the other scores represent the attitude of the opposite Health Professionals use the computers were found to relate significantly to the total number of years engaged in the use of the computers to work (p>0,05).

## 3.10 Correlation of Attitude towards the use of the Computers and the Total Number of Years working in this Hospital

The audit shows that there is no statistically significant correlation. This means that the work experience in this hospital is not playing a role in shaping the attitudes of health professionals towards the use of the computers (p> 0,05).

## 3.11 Correlation of Attitude towards the use of the Computers and the Total Number of Years working in this Department

The audit shows that there is a statistically significant correlation of scores of "job losses" and work experience in this segment (Table 10). Specifically, the greater the experience in this segment, participants felt that the use of the computers leads to a loss of jobs and that pose a threat to their work (r=0,134 and p=0,021<0,05) . Regarding the score balances the attitude of health professionals were found to relate significantly with years of working experience in this section (p>0,05).

## 4  Discussion

The results of the above research analyzes showed that there is a statistically significant correlation between the profession and some demographic information. Initially, the application of statistical control seems that there is a statistically significant correlation between the profession and age (p <0,001). The majority of physicians (33.3%) and nurses are aged 31-40 years old, while the majority of administrators (44.1%) are aged 41-50 years. Similarly it seems that there is a statistically significant correlation between the profession to sex (p <0,001), where the majority of doctors are male (66%), while most nurses and employees in administration are women (90.7% and 65.7 % respectively). Also, it seems that there is a statistically significant correlation between the profession and the years of work experience (p <0,001), education level (p <0,001) and the date of obtain their latest degree (p <0,001). The doctors (43.3%) and nurses (44.4%) mostly have a work experience to 10 years, while the administrative staff (39.2%) experienced at that location from 21 to 30 years. The majority of physicians (50%) is the senior title university degree and nurses (44.4%) technological Educational degree. On the other hand, workers who belong to the administrative staff, say that the majority of them have (38.2%), "other" degree. Finally, 60% of physicians and 49.1% of nurses graduated after 2000, in contrast with 52% of the administrative staff who graduated before 1990.

Then, by applying statistical control of knowledge of the computers, seems that there is a statistically significant correlation between the profession and the courses for the computers in basic education of participants (p = 0,011 <0,05). Physicians (45.6) and nurses (50.0) have been taught the computers lessons during their basic training to more than administrators (30.4). Similarly, it seems that there is a statistically significant correlation between the profession and experience in the use of the computers to work (p <0,001) and the total number of years dealing with a using of the computers to their work (p <0,001). Specifically, doctors (85.6%) and administrators (80.4%) have experience in using the computers to work at a rate higher than that of nurses (57.4%) and the majority of doctors (85.7%) and nurses (88.7%) experienced up to 10 years, while the majority of administrative (47.6%) experienced between 11 and 20 years.

It is also appears that there is a statistically significant correlation between the profession and the years of experience in this hospital (p <0,001), and the years of experience in this part of the hospital (p = 0,001 <0,05). Specifically, the majority of doctors (72.2%) and nurses (53.7%) overall in the hospital working up to 10 years. In contrast, years working experience for administrators seems that evenly distributed among all the years of their work experience

Furthermore, the majority of physicians (70%) and nurses (78.7%) work in total in this segment up to 10 years. In contrast, years working experience for administrators, in this part seems mainly shared between 0-10 years of work experience and 11-20 years. Counting then attitude with the five aforementioned assumptions, we have the following results.

For the first research hypothesis that improving the care provided to the patient by the use of the H / PC and expansion of the hospital information systems, the attitude of doctors and nurses is from neutral to positive. On the one hand, our results coincide with other studies that we looked for as though they measured only the attitude of nurses to improve the care provided to the patient by use of the computers [13,14]. On the other hand, administrators have a more positive attitude towards the doctors and nurses and their

attitude is justified since no direct contact with patients. Administrators' results are similar to those of the study of Ms. Kalafati [15].

For the second research hypothesis concerning the benefit to the hospital by the use of the computers, nurses are neutral and they do not see any benefit of the hospital by using the computers. The doctors and administrators argue that the use of the computers reduces costs and workload. Studies that measured the negative attitude only medics for the benefit of the institution by using the computers are the Sultana [16] and Wiley [17].

For the third research hypothesis, which relates to the reduction of jobs by using the computers, our results have changed from them of the literature review. Studies of Wilson [18] and Large [19], was showing a negative attitude. That is because the health professionals stated that there was no risk of job reductions from the use of the computers. But today, the attitude of health professionals has changed due to the economic crisis and the changes underway in the Public Sector. So their attitude is neutral, and declares that it is not certain whether the use of the computers represents a risk reduction of their jobs.

For the fourth research hypothesis, which researches the increase efficiency and staff possibilities, doctors and nurses have a neutral to positive attitude and the administrators have a positive attitude. The positive attitude of the administration is justified because of the convenience and capabilities provided by the computers in the workplace and the doctors and nurses become steadily more positive attitude in relation to the friction because previous studies on the subject. Similar results for the attitude of the nursing staff showed researchers McBride [20] and Negron [7].

Finally, the fifth research hypothesis, concerning increasing legal liability of staff using of the computers, our results have changed them from the literature review. The studies of Bryson [21] and Saranto & Leino-Kilpi [22]) until nowadays recorded the negative attitude of the nurses. In our study, all health care professionals have a neutral to positive attitude. This behavior of the health professionals is clearly justified because today most information security in Hospital Information Systems (HIS) is fragile and vulnerable.

In conclusion, it is useful to mention that in our literature review observed change in the attitudes of health professionals over the years. Earlier studies in the 60's, showed negative attitude of health professionals towards the use of the computers at all levels. But with the passage of time, proper education, acquaintance with the computer as a tool to facilitate their work, this attitude began to change. Health professionals became more positive about the introduction of the computers in their lives and expand their workplace. The gradual introduction of the computers to all hospital departments as compulsory education in computer courses now led to this change. Moreover to this change helped the introduction of computers courses at all levels of education and the recruitment process through the Supreme Council staff selection, where the degree of the computers is now mandatory and fast document.

# References

[1] E. Zogopoylos, Informatics World, Klidarithmos Publications, Fourth Edition, Athens, (2004).

[2] P. Aggelidis, Medical Informatics, Volume A, Sofia Publications, Thessaloniki, (2011).

[3] J. Mantas, Health Informatics - Nursing Approach, Medical Publications P. H. Pasxalidis, Athens, (2007).

[4] S. Krampf, S. Robinson, Managing nurses' attitudes towards computers. *Nursing Management*, **15**(7), (1984), 29-34.

[5] M. Fishbein, I. Ajzen, Belief, attitude, intention and behavior: An introduction to theory and research. Addison-Wesley, Reading, MA, 1975.

[6] K. Smith, V. Smith, M. Krugman, & K. Oman, Evaluating the impact of computerized clinical documentation. *CIN: Computers, Informatics, Nursing,* **23**(3), (2005), 132-138.

[7] JA. Negron, The impact of computer anxiety and computer resistance on the use of computer technology by nurses. *Journal of Nursing Staff Development*, **11**(3), (1995), 172−175.

[8] A. Brodt, JH. Stronge, Nurses' attitudes towards computerization in a Midwestern community hospital. *Comput Nurs,* **4**(2), (1986), 82−86.

[9] RD. Cork, WM. Detmer, and CP. Friedman, Development and Initial Validation of an Instrument to Measure Physicians' Use of, Knowledge about, and Attitudes Toward Computers. *Journal of the American Medical Informatics Association,* **5**(2), (1998), 164-176.

[10] C. Beatty, User attitudes to computer-based decision support in Anaesthesia and Critical Care: A preliminary Survey *The internet Journal of Anaesthesiology*, **3**(1), (1999), 49-56.

[11] SS. Liaw, WC. Chang, WH. Hung, HM. Huang, Attitudes toward search engines as a learning assisted tool: Approach of Liaw and Huang's research model. *Comput Hum Behavior,* **22**(2), (2006), 177−190.

[12] EB. Swanson, Management information systems: Appreciation and involvement. *Manage Sci*, **21**(2), (1974), 178−188.

[13] JH. Stronge, A. Brodt, Assessment of nurses' attitudes toward computerization. *Comput Nurs,* **3**(4), (1985), 154−158.

[14] LE. Perreault, G. Wiederhold, System design and evaluation. In: Shortliffe EH, Perreault LE, Wiederhold G, Fagan LM (eds) *Medical informatics: Computer applications in healthcare.* Addison-Wesley Publishing Company, Reading, MA, (1990), 151–178.

[15]  M. Kalafati, Attitude of health professionals towards the implementation of hospital information systems, PhD Thesis, Nursing Department, National University of Athens, Athens, (2003).

[16] N. Sultana, Nurses' attitudes towards computerization in clinical practice. *J Adv Nurs,* **15**(6)*,* (1990), 696−702.

[17] A. Wiley, Fitting the pieces together: Managing, interfacing, and utilizing a nursing clinical information system. In: Carter BEL, Walker D (eds) *HIC 1994 proceedings.* HISA, Melbourne, (1994), 223−226.

[18] BA. Wilson, Computer anxiety in nursing students. *J Nurs Educ,* **30**(2), (1991), 52−56.

[19] WP. Large, Nurses' attitudes towards computerization in intensive care. *Br J Nurs,* **3**(11), (1994), 558−564.

[20] SH. McBride, LM. NAGLE, Attitudes toward computers. A test of construct validity. *Comput Nurs,* **14**(3), (1996), 164−170.

[21] DM. Bryson, The computer-literate nurse. *Comput Nurs,* **9**(3), (1991), 100−107.

[22] K. Saranto, H. Leino-Kilpi, Computer literacy in nursing: Developing the information technology syllabus in nursing education. *J Adv Nurs,* **25**(2), (1997), 377−385.

# Appendix

Table A1: Key statistical position and dispersion measures for the five scores in the attitudes of health professionals towards the use of the computers.

| Score | Mean | Standard Deviation (SD) | Min | Max |
|---|---|---|---|---|
| Providing quality care to the patient | **3,7** | 0,69 | 1,3 | 5,0 |
| Benefit of Hospital | **2,5** | 0,81 | 1,0 | 4,8 |
| Reduce jobs | **2,7** | 1,01 | 1,0 | 5,0 |
| Increasing efficiency and staff capabilities | **3,8** | 0,67 | 1,5 | 5,0 |
| Increasing the legal responsibility of staff | **3,5** | 0,83 | 1,3 | 5,0 |

Table A2: Results of statistical correlation of different scores between the three groups of health professionals.

| Score | | N | Mean | Standard Deviation (SD) | Min | Max | Statistical Control |
|---|---|---|---|---|---|---|---|
| Providing quality care to the patient | Medical staff | 89 | 3,6 | ,82 | 1,3 | 5,0 | |
| | Nursing Staff | 107 | 3,5 | ,67 | 1,8 | 4,8 | F=8,86 |
| | Administrative Staff | 102 | 3,9 | ,51 | 2,3 | 5,0 | **p<0,001**\*\* |
| | **Total** | **298** | **3,7** | **,69** | **1,3** | **5,0** | |
| Benefit of Hospital | Medical staff | 90 | 2,5 | ,89 | 1,0 | 4,8 | |
| | Nursing Staff | 108 | 2,7 | ,78 | 1,0 | 4,5 | F=4,44 |
| | Administrative Staff | 102 | 2,4 | ,74 | 1,0 | 4,3 | **p=0,013**\* |
| | **Total** | **300** | **2,5** | **,81** | **1,0** | **4,8** | |
| Reduce jobs | Medical staff | 89 | 2,8 | ,99 | 1,0 | 5,0 | |
| | Nursing Staff | 108 | 2,7 | ,96 | 1,0 | 5,0 | F=0,346 |
| | Administrative Staff | 102 | 2,6 | 1,09 | 1,0 | 5,0 | p=0,708 |
| | Total | 299 | **2,7** | 1,01 | 1,0 | 5,0 | |
| Increasing efficiency and staff capabilities | Medical staff | 89 | 3,7 | ,79 | 1,5 | 5,0 | |
| | Nursing Staff | 106 | 3,7 | ,67 | 1,8 | 5,0 | F=9,053 |
| | Administrative Staff | 101 | 4,1 | ,49 | 2,8 | 5,0 | **p<0,001**\*\* |
| | **Total** | **296** | **3,8** | **,67** | **1,5** | **5,0** | |
| Increasing the legal responsibility of staff | Medical staff | 89 | 3,5 | ,89 | 1,3 | 5,0 | |
| | Nursing Staff | 108 | 3,5 | ,86 | 1,3 | 5,0 | F=0,491 |
| | Administrative Staff | 101 | 3,6 | ,74 | 1,3 | 5,0 | p=0,613 |
| | Total | 298 | **3,5** | ,83 | 1,3 | 5,0 | |

\*\* statistically significant effect at a significance level of 1%

\* statistically significant effect at a significance level of 5%

Table A3: Statistical correlation of attitudes of health professionals towards results using the computers and age

| Score | Age (years) | N | Mean | Standard Deviation (SD) | Min | Max | Statistical Control |
|---|---|---|---|---|---|---|---|
| Reduce jobs | 19-30 | 41 | 2,7 | ,87 | 1,0 | 5,0 | |
| | 31-40 | 97 | 2,6 | 1,02 | 1,0 | 5,0 | **F=3,809** |
| | 41-50 | 97 | 2,6 | ,97 | 1,0 | 5,0 | **p=0,011\*** |
| | > 50 | 64 | 3,1 | 1,09 | 1,0 | 5,0 | |
| | Σύνολο | **299** | **2,7** | **1,01** | **1,0** | **5,0** | |

* statistically significant effect at a significance level of 5%

Table A4: Statistical correlation of attitudes of health professionals towards results using of the computers and total years of service to the profession.

| Score | Correlation coefficient Spearman r | p-value |
|---|---|---|
| Providing quality care to the patient | 0,018 | 0,752 |
| Benefit of Hospital | -0,003 | 0,963 |
| Reduce jobs | **0,137** | **0,018\*** |
| Increasing efficiency and staff capabilities | -0,007 | 0,902 |
| Increasing the legal responsibility of staff | -0,099 | 0,087 |

* statistically significant effect at a significance level of 5%

Table A5: Statistical correlation of attitudes of health professionals towards results using of the computers and the date of obtain the latest degree.

| Score | Correlation coefficient Spearman r | p-value |
|---|---|---|
| Providing quality care to the patient | 0,045 | 0,441 |
| Benefit of Hospital | -0,073 | 0,210 |
| Reduce jobs | **-0,200** | **0,001\*** |
| Increasing efficiency and staff capabilities | 0,088 | 0,129 |
| Increasing the legal responsibility of staff | **0,160** | **0,006\*** |

* statistically significant effect at a significance level of 5%

Table A6: Statistical correlation of attitudes of health professionals towards results using the computers and computers courses in basic education.

| Score | Computers courses in basic education | N | Mean | Standard Deviation (SD) | Statistical Control |
|---|---|---|---|---|---|
| Providing quality care to the patient | No | 173 | 3,6 | ,73 | t=1,850 |
| | Yes | 125 | 3,7 | ,63 | p=0,065 |
| Benefit of Hospital | No | 174 | 2,6 | ,84 | t=1,979 |
| | Yes | 126 | 2,4 | ,76 | p=0,052 |
| Reduce jobs | No | 174 | 2,8 | 1,06 | t=2,340 |
| | Yes | 125 | 2,6 | ,93 | **p=0,020\*** |
| Increasing efficiency and staff capabilities | No | 172 | 3,8 | ,70 | t=2,289 |
| | Yes | 124 | 4,0 | ,62 | **p=0,023\*** |
| Increasing the legal responsibility of staff | No | 173 | 3,4 | ,88 | t=2,577 |
| | Yes | 125 | 3,7 | ,72 | **p=0,010\*** |

\* statistically significant effect at a significance level of 5%

Table A7: Statistical correlation of attitudes of health professionals towards results using of the computers and the computers user experience generally.

| Score | Experience in computers (generally) | N | Mean | Standard Deviation (SD) | Statistical Control |
|---|---|---|---|---|---|
| Providing quality care to the patient | No | 68 | 3,4 | ,67 | t=2,951 |
| | Yes | 230 | 3,7 | ,69 | **p=0,003\*** |
| Benefit of Hospital | No | 68 | 2,8 | ,76 | t=3,631 |
| | Yes | 230 | 2,5 | ,80 | **p<0,001\*\*** |
| Reduce jobs | No | 68 | 3,0 | 1,11 | t=2,835 |
| | Yes | 231 | 2,6 | ,97 | **p=0,005\*** |
| Increasing efficiency and staff capabilities | No | 67 | 3,6 | ,66 | t=3,822 |
| | Yes | 229 | 3,9 | ,66 | **p<0,001\*\*** |
| Increasing the legal responsibility of staff | No | 68 | 3,3 | ,91 | t=2,865 |
| | Yes | 230 | 3,6 | ,79 | **p=0,004\*** |

\*\* statistically significant effect at a significance level of 1%

\* statistically significant effect at a significance level of 5%

Table A8: Statistical correlation of attitudes of health professionals towards results computers using and the user experience of the computers to work.

| Score | Experience in computers in the workplace | N | Mean | Standard Deviation (SD) | Statistical Control |
|---|---|---|---|---|---|
| Providing quality care to the patient | No | 79 | 3,4 | ,71 | t=3,103 |
| | Yes | 219 | 3,7 | ,67 | **p=0,002*** |
| Benefit of Hospital | No | 79 | 2,7 | ,77 | t=2,645 |
| | Yes | 221 | 2,5 | ,81 | **p=0,009*** |
| Reduce jobs | No | 79 | 2,8 | 1,10 | t=1,392 |
| | Yes | 220 | 2,7 | ,98 | p=0,165 |
| Increasing efficiency and staff capabilities | No | 78 | 3,7 | ,69 | t=2,529 |
| | Yes | 218 | 3,9 | ,66 | **p=0,012*** |
| Increasing the legal responsibility of staff | No | 79 | 3,5 | ,90 | t=0,525 |
| | Yes | 219 | 3,5 | ,80 | p=0,600 |

* statistically significant effect at a significance level of 5%

Table A9: Statistical correlation of attitudes of health professionals towards results computer using and the total number of years engaged in computer using to work.

| Score | Correlation coefficient Spearman r | p-value |
|---|---|---|
| Providing quality care to the patient | **0,138** | **0,042*** |
| Benefit of Hospital | -0,086 | 0,204 |
| Reduce jobs | -0,058 | 0,393 |
| Increasing efficiency and staff capabilities | 0,117 | 0,085 |
| Increasing the legal responsibility of staff | 0,102 | 0,133 |

* statistically significant effect at a significance level of 5%

Table A10: Statistical correlation of attitudes of health professionals towards results computers using and the total number of work in this section.

| Score | Correlation coefficient Spearman r | p-value |
|---|---|---|
| Providing quality care to the patient | 0,078 | 0,178 |
| Benefit of Hospital | 0,005 | 0,937 |
| Reduce jobs | **0,134** | **0,021*** |
| Increasing efficiency and staff capabilities | -0,004 | 0,939 |
| Increasing the legal responsibility of staff | -0,052 | 0,367 |

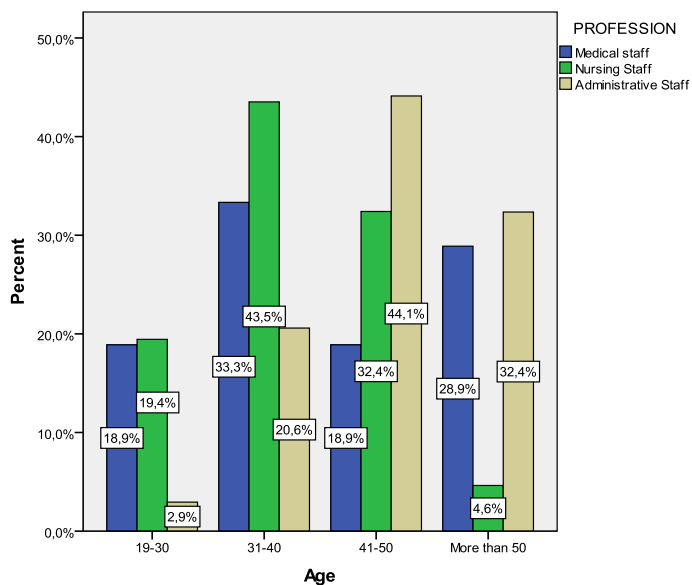* statistically significant effect at a significance level of 5%

Figure A1: Graph between the health professional and the age distribution
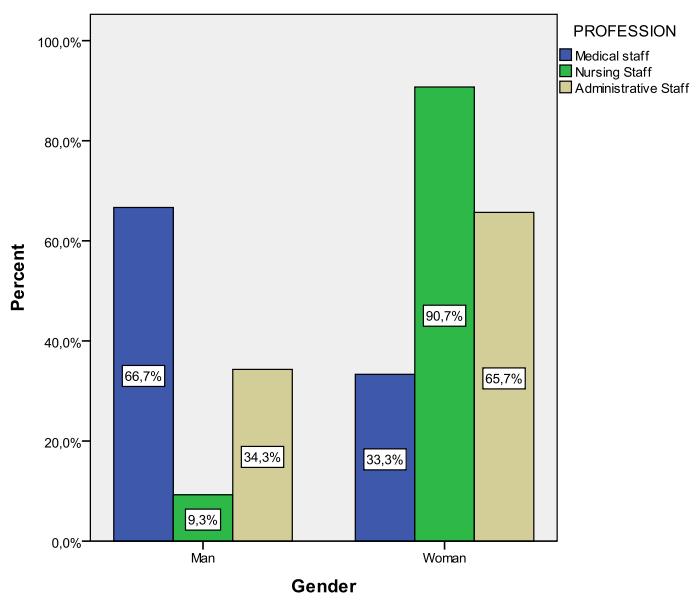


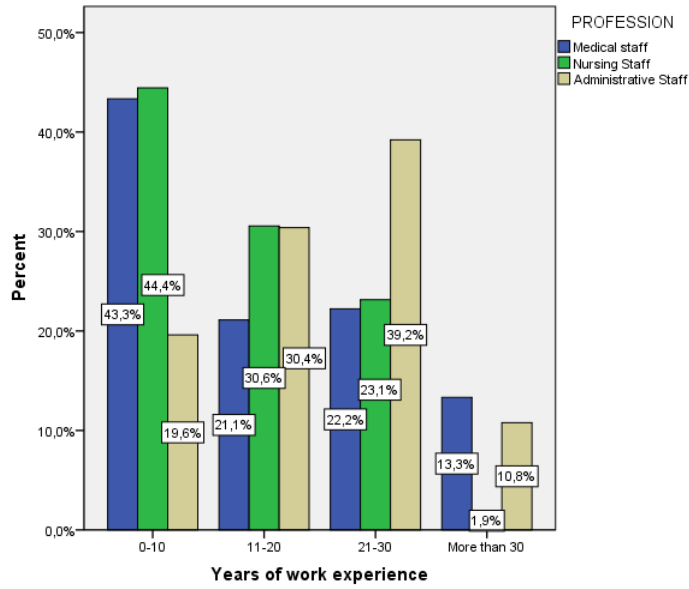Figure A2: Graph between the health profession and gender

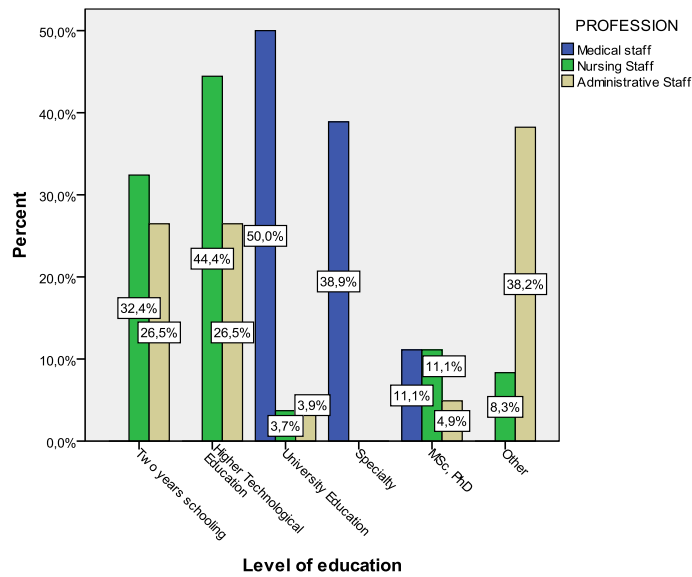Figure A3: Graph between the health profession and the years of work experience



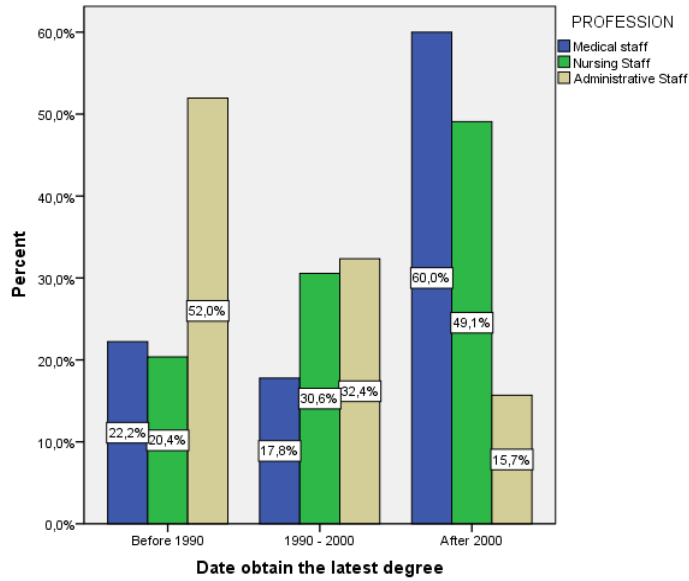Figure A4: Graph between the health profession and level of education

Figure 5A: Graph between the health professional and the date of obtain the latest degree.
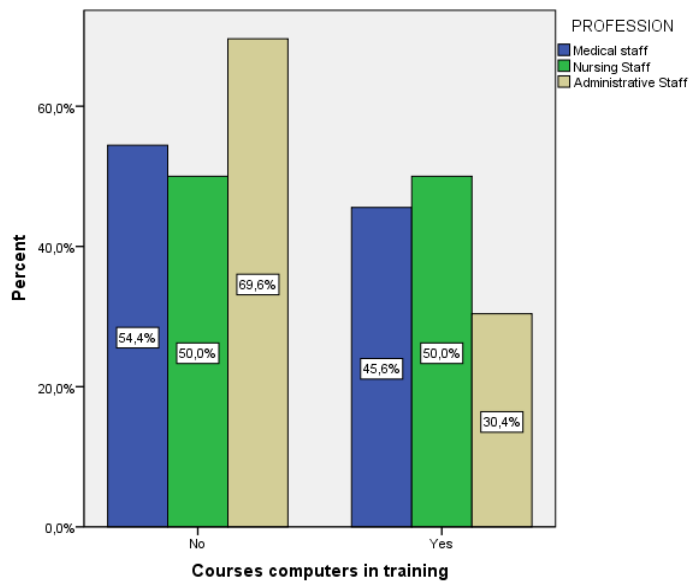


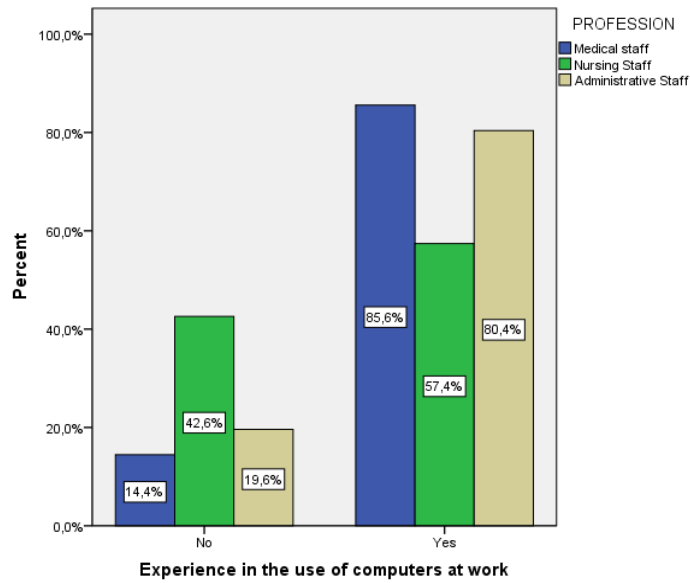Figure A6: Graph between the profession and the courses for the computers in training for participants

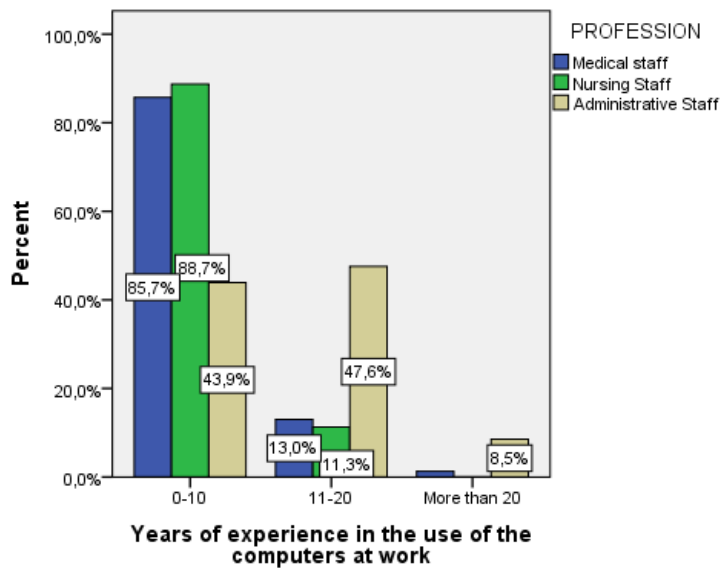Figure A7: Graph between the profession and the experience in the use of computers at work



Figure A8: Graph between the profession and the years of experience in the use of the computers at work
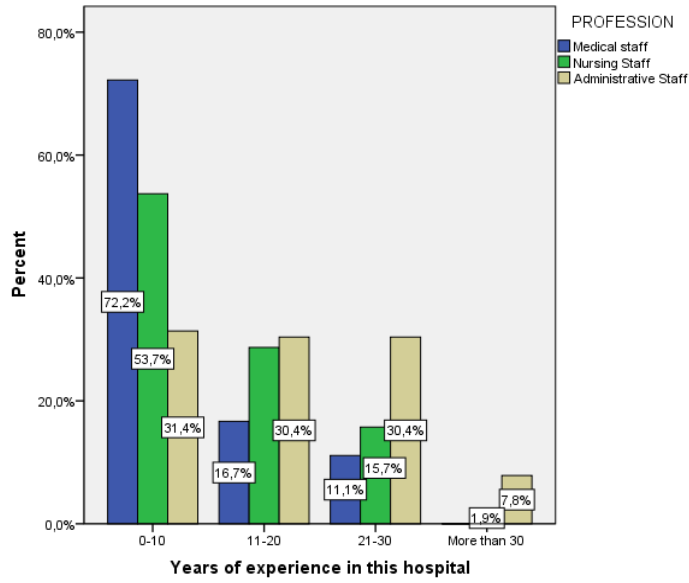
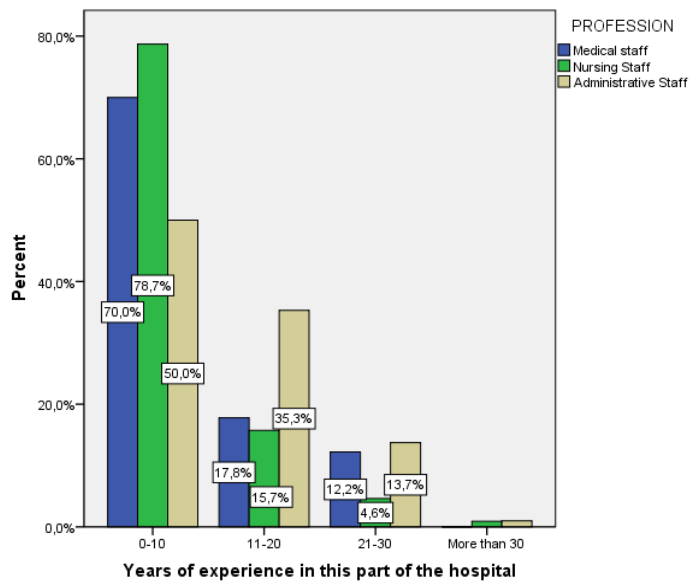Figure A9: Graph between the profession and the years of experience in this hospital



Figure A10: Graph between the profession and the years of experience in this part of the hospital