

The use of technology by the elderly

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Abstract

The use of technology and its' providing information allows the elderly to face more easily the difficulties of modern life, trespassing the limits of their social and emotional isolation, thus achieving a more qualitative living.

The purpose of this research was to explore whether the elderly were familiar with modern technology.

Material and Method: The sample studied consisted of 300 people, 65-85 years old. Collection of data was conducted by the completion of an anonymous questionnaire. Analysis of data was performed using the SPSS 15 statistical package and one-way ANOVA χ^2 -test, and t-tests were applied for the statistical process.

Results: Of the 300 individuals studied, 134 were men and 166 women. 79.7% were in the age group of 65 to 74 years. All respondents reported that they used everyday appliances. In detail, 94% of women used machines that help in household tasks such as washing machines, 98.5% iron, whereas the 98.8% of men preferred watching television. Regarding the use of ATM machines, women faced more difficulties with a statistical significant difference, compared to men, $p < 0,001$. On the contrary, 93.37% of women handled mobile phones almost satisfactorily compared to men, $p < 0,001$. Both sexes, however, preferred the hearing headset, 72.93% women and 89.76% men, when facing hearing difficulties.

Conclusions: Aging is a normal procedure in which deduction in all biological and mental functions takes place, leading to exhaustion and losing patience. Older people constantly face with the challenges of contemporary reality, as the ever-evolving technology. For this reason, they need appropriate support and guidance in order to satisfactorily meet with the difficulties of everyday living.

Keywords: elderly people, technology, electronic devices, quality of life

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Introduction

In the rapidly aging population, the elderly are called upon to adapt to new technology and the demands of modern society. It is widely accepted that elder individuals show low adjustment to the advent of new technologies compared to younger generations, either because they do not have the technological experience or because of their current health status^{1,2,3}.

Furthermore, at their effort to use new technologies, they usually face many difficulties deriving from demographic characteristics such as income, education, geographical location, possible disabilities, as well as difficulties related to the complexity of new technology. Other contributing factors for this low adjustment to new technologies are the lack of incentives, economical obstacles, digital skills and appropriate training. A commonly held view is that the market is not currently investing enough on innovations for the elder users, such as comprehensive and user-friendly services for healthier living conditions. In addition, many products and services often are not appropriate to the needs of elder users, exacerbating the sense of frustration and leading to dependence on other people^{3,4,5}.

The main sources of information for the elderly is the Internet, thematic television channels and magazines. In their effort to take greater responsibility for their personal health, physical status and independent living conditions, the elderly users need to be more informed through the use of Internet, thematic television channels, magazines and other sources of information^{6,7}.

Technology may involve the use of most simple everyday electrical appliances (TV, kitchen, vacuum cleaner, dishwasher, etc.) or other more complex machines (ATMs, PCs, mobile phones etc.) premising the ability to properly use them.

In is widely accepted the use of new technology by the elderly population has a beneficial effect on their quality of life. It is an essential step if the younger help them

to familiarize with technology, thus removing all fears of new technology use. Furthermore, understanding the difficulties that the elderly experience should prompt health professionals to provide adequate information that will significantly contribute to the improvement of their quality of life^{8,9,10}.

It seems very important, that the state could contribute to the elderly's adaptation in new technology, as they may organize a publicity campaign (leaflets with instructions, spots, etc.) in order to raise public awareness.

Material and Method

The sample of this research consisted of 300 people (134 men and 166 women) aged 65-85 + years from the geographical divisions of Macedonia, Thessaly, Central Greece, Attica and the Peloponnese. The sample has been taken in accordance to the rules of random sampling, by personal interview of the researcher, visiting Open Centers of Protection for the Elderly.

At first, a preliminary study (pilot study) was conducted in 30 subjects, by using all necessary parameters, as well as all specialized techniques and tests for the analysis of the data collected.

Data were collected by the completion of a questionnaire, consisted of 26 items related to the demographic characteristics, the use of technology and the health of the participants. The questionnaire included closed and open-ended questions, and was completed by personal interview of the researcher, after having given the necessary information, clearly explained the objectives of the survey and ensured anonymity of the respondents. The completion of the questionnaires lasted from August to October 2007.

Statistical Program for Social Sciences SPSS 15 was used for the statistical processing of the data. The chi-squared test was used for testing the hypothesis of

independence between two variables, as well as for testing the homogeneity of distribution for two categorical variables. Whenever the above test was not applicable (expected frequencies of less than 5), the Fisher exact test was used. Cronbach's alpha, showing the internal consistency of scale, is $\alpha=0,9027$. The Anova and the t-test were used for testing equality of means for more than two or less than two groups respectively.

All tests are significant when the p-value is less than 0.05. For the graphical display of data, frequency graphs and percentages were used, such as histograms, pies and statistical tables.

Results

Of the 300 participants, 79.7% women and 71.08% of men aged 65 to 74 years. Women, 6.77%, were the highest percentage in the upper age group (>85 years) compared with men, 1.81%. (Figure :1)

In regard to the use of electrical device by gender, 94% of women used washing machine, 67% vacuum cleaner, 87.2% electric iron, 98.5% with electric stove and 54% wireless phone. Almost all the respondents answered that they were able to handle the TV. (Figure :2) More in detail, compared to men, women were more familiar to the use of washing machine, vacuum cleaner, electric iron, electric stove, with statistical significant difference, $p<0,001$.

In regard to ATM (automatic teller machines), 28.4% of the participants reported that they "always" used ATMs (approximately 85 people in the study), "sometimes" 39.2%, "rarely" 28.4% and "do not ever use" ATMs, 4%. (Table :1). More in detail, regarding the frequency of use ATM in relation to sex, 49.6% of women and 11.4% reported that they never used ATM, 27.0% of women AND 48.8% of men reported that they used ATM rarely, whereas 22.5% of women and 33.1% of men reported that they used ATM sometimes and never 0,7% of women and 6,6% of men. (Fig: 3).

78.3% of the participants used mobile phones. More in detail, regarding the use of mobile phones in relation to Sex, 40.6% of the women and 6.6% of men did not use mobile phone, whereas 59.4% of women and 93.3% of men used mobile phone. (Fig: 4).

In regard to the use of hearing aids, 72.93% of women and 89.76% of men did not use it, whereas 27.07% of women and 10.24% of men used hearing aids. (Fig: 5).

Discussion

This research, studied the ability of the elderly to meet with the rapidly advancing technology and mainly the use of everyday appliances and devices, such as household appliances, mobile phones, banking machines and auxiliary hearing aids if the elderly experienced hearing problems.

According to the results the average age of women, in all three age groups, was higher compared to men. One possible interpretation is that women develop greater life expectancy than men, following the general trend worldwide, and seem to outnumber men. According to a report published by the G.S.V.E.E. in 2003, life expectancy in Greece stood at 76.5 years for men and 81.3 years for women¹¹.

Very important are the findings, about the proportion of elderly people who use electronic household appliances. Thus, in their daily lives, the elder individuals used appliances such as washing machines, electrical kitchen, wireless phones, vacuum cleaner, iron and the overwhelming majority used television. Interestingly, however, is that in all cases, women used these devices in a greater proportion than men, who only show elevated rates in using the television, compared to women.

A similar survey conducted by the National Statistical Service of Britain, from 1998 to 2001, at a national level, among people aged 65 and older, showed that elderly people used largely household appliances¹². Specifically, the use of electrical kitchen and oven from 65% in 1998, rose to 75% by 2001, the use of TV from 13% to 23% in 2001, while the elderly in Britain

are aware of and able to use computers and the Internet in a proportion of 14%.

An additional survey that was conducted in New Zealand by Alison Robins¹³, indicated that the majority of the elder citizens enjoyed at a high rate almost all domestic facilities, provided by electrical devices. More in detail, 93% of the participants were able to handle TV, 87% washing machine and dryer, 99% high technology refrigerators and 94% to use wireless phones.

Similar to the present findings, the results of the by the Statistical Office of Finland showed that 30% of the elderly women used washing machines, whereas 7% of men used these electrical devices¹⁴.

According to the results of the present study few participants used ATM machines. A possible explanation is that the elder individuals, having not been familiar with new technology, are frequently discouraged at their effort to use ATM due to the difficulties they face such as handling the keyboard, fear, ignorance, screen problems.

The results of the present study are similar to those by Arsenos et al.,¹⁵ who showed that 57.8% of the elder participants living in Athens had not ever used the ATMs and consequently they ignored the services and opportunities provided by the machines of this type. On the contrary, 5.9% of participants reported that they were aware of all the services and capabilities of ATMs. The reasons to avoid using ATMs were the difficulty of handling the keyboard, the lack of knowledge about their operations and the fear of being robbed during the transaction.

Similarly, in Netherlands, Mollenkopf et al.,¹⁶ showed that only a small percentage of the elderly used the ATMs because all the other found it difficult to adjust to new technology and generally to the use of new devices. However, those who used them, reported quite satisfied and found out that technology facilitated their lives.

Very interesting are the findings concerning the familiarity of participants to mobile phones. More in detail, elderly men (93.4%) used them more often than women

(59.4%). Interestingly, knowledge of mobile use is limited in achieving calls and in some cases, sending short messages. There is no extensive use of services and opportunities offered by mobile phones.

In Japan, Hata et al.,¹⁷ showed that among Japanese women, aged 70-89 years, only 10% were using mobile phones, whereas 60% of the participants showed interest in learning how to use a mobile phone. Thus, researchers concluded that the design of a type of keyboard combining the features of a touch screen and a dictionary could be highly beneficial for the elderly. Furthermore, the survey conducted, by Shizuka et al.,¹⁸ in Japan, showed that 37.8% of individuals aged 60-69 years and 19.1% aged 70 to 80 years used mobile phones

Interesting also are the results by Salmon et al.,¹⁹ who studied whether individuals with Alzheimer in Belgium were able to use mobile phones. This study showed that after 2 sessions about the use of mobile phone, two patients learned properly to use it. This study highlights the efficacy of coordinated and organized efforts for patient autonomy.

According the difference between sexes and the use of mobile phones, there is a study conducted by Sri Kurniawan,²⁰ the United Kingdom, showed that women were those who make more and often indiscriminate use of mobile phones, especially those of age 65 to 74 years, at a percentage of 60%, while those aged 75 years and older, 36%. A research carried out in Malaysia, among 176 senior citizens, by Mohr Hairum Nizam et al.,²¹ concluded that elderly people are able to use mobile phones, especially men use them at a rate 60%.

From all the above, is easily seen that in countries where technology is highly developed, such as Asian countries, the elderly are more familiar with the use of advanced phones, compared to elderly people living in countries where technology is in early stages and is under development.

Important are also the findings related to elderly people with hearing problems. Thus, 82.3% of elderly people do

not use hearing aids. The percentage of women who used hearing headsets was higher compared to men. In a survey conducted in Kuopio, Finland, in March 2005, related to the percentage of avoiding the use of hearing aids, among the elderly over 75 years, Lupsakko et al.,²² concluded that 13-15% of older people with hearing problems, have held hearing headsets. But most of them did not use them, either because they could not understand how they work, or because it was not the perfect device to have chosen, in shape and size.

It is worth noting, that the hearing aids cannot be used by people with intellectual disabilities and concluded that the use of hearing aids by persons with disabilities can lead to incorrect use, therefore, these people should be monitored and receive special treatment from qualified people.

Regarding hearing headsets, Fletcher et al.,²³ studied elderly people who had problems with their hearing related to use of hearing aids. The researchers collected personal information for 32.656 individuals and gave the opportunity to 78% (14.877) of them to do an acoustic test. It was found that 8% participants (2537), showed great difficulty in listening and 46% failed in acoustic tests. More than half of people who failed the test had no special equipment, while 60% of the participants who wore hearing aids, stated that they use them regularly. The level of use of hearing devices were in perfect line with the level of perception of the elderly.

From the results of the present study, it is evident that the use of new technologies by the elderly population significantly contributes to a better quality of life, improving parameters of daily living such as transportation facilitation, communication and participation in social life. Further, it offers the link of elderly to services that meet their immediate needs, and in particular the cooperation and coordination with the network of Primary Care and Social Protection.

Conclusion

Education of the untrained elderly is the most essential step in order to become familiar with new technologies. More in detail, this can be accomplished through specifically designed education programs that teach elderly the way new technologies work.

Furthermore, these programs should be also addressed to individuals who belong to the supportive environment of the elderly such as the younger members of the family. It would be beneficial if the younger helped them to familiarize with each object, removing fears of using high technology devices.

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Appendix

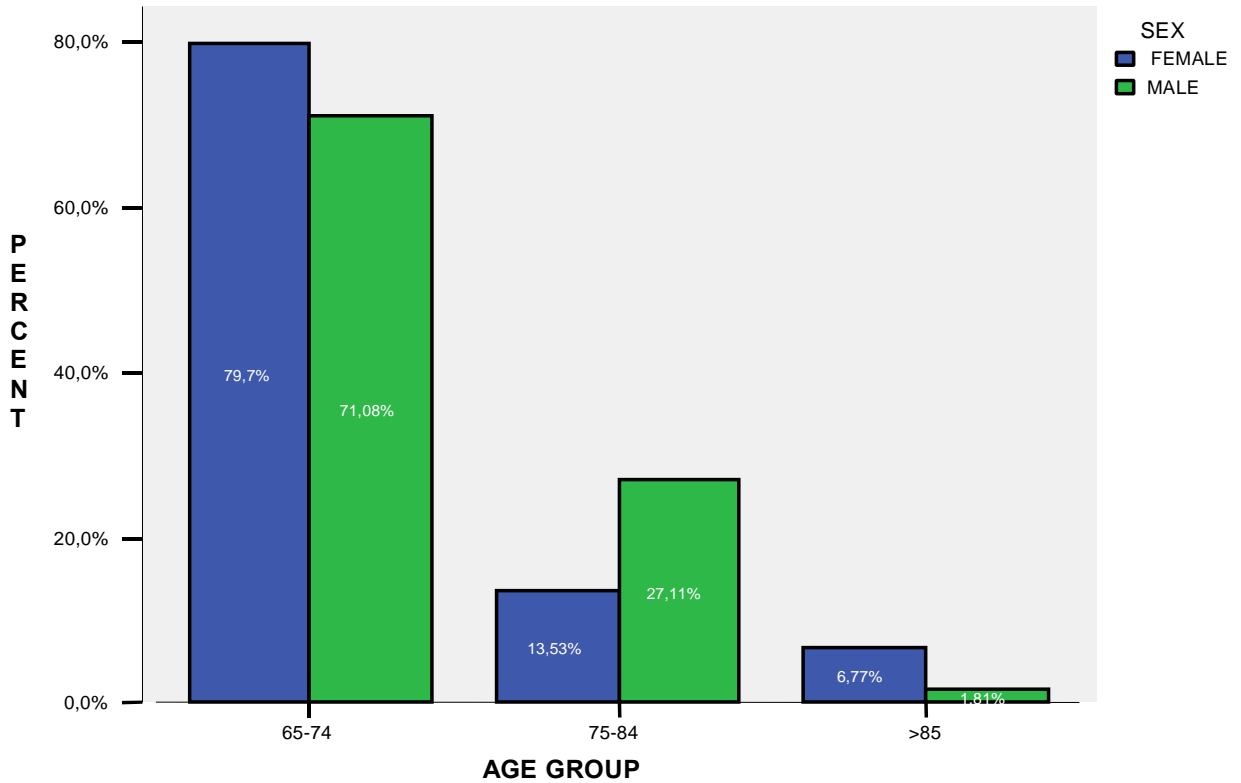


Figure 1: Distribution of the sample according to the use of electrical device.

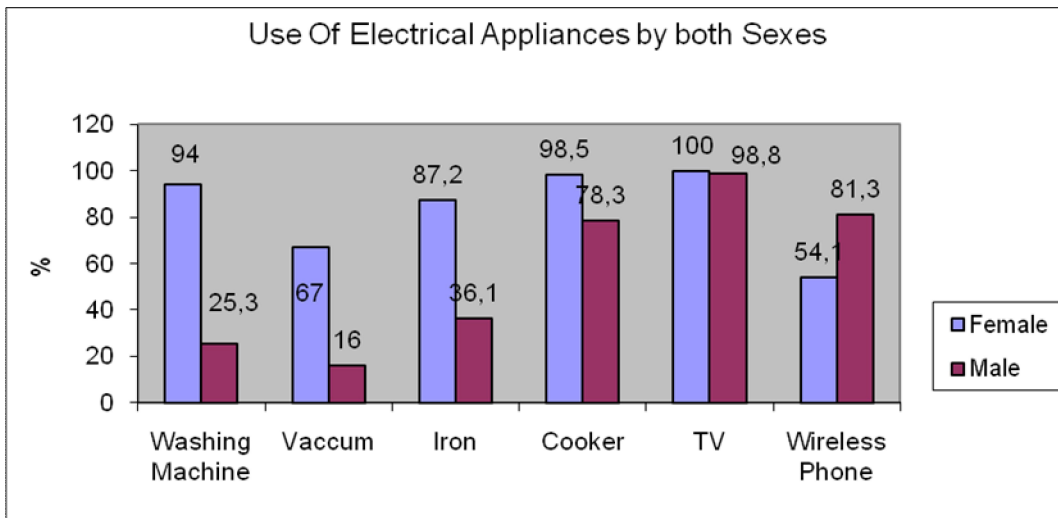


Figure 2 : Use of electrical appliances by gender

ATM Use	N	%
Allways	85	28,4
Sometimes	117	39,2
Rarely	85	28,4
Never	12	4,0
Total	299*	100

Table 1 : Distribution of the sample-studied according to the frequency of ATM Use

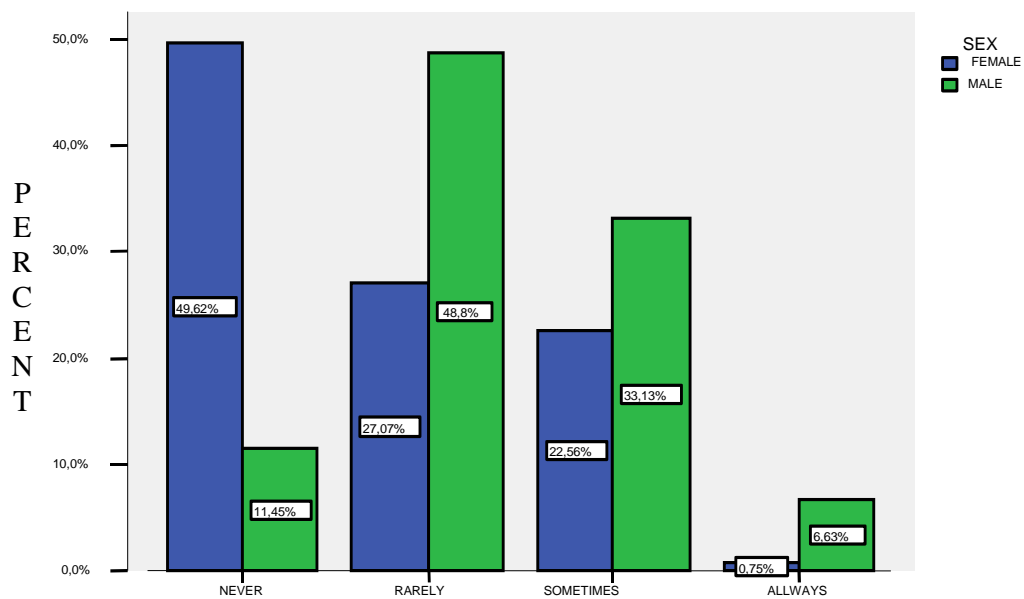


Figure 3 : Distribution of the sample-studied according to ATM use in relation to Sex

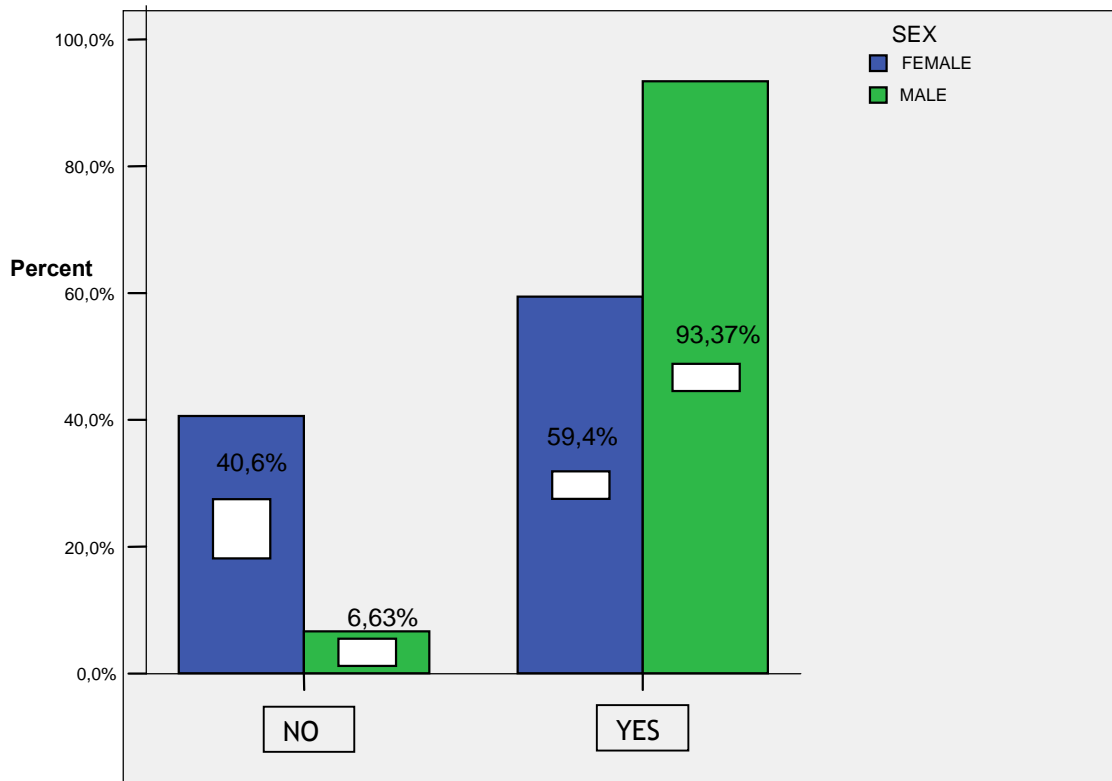


Figure 4 : Distribution of the sample-studied according to Use of Mobile Phones in relation to Sex

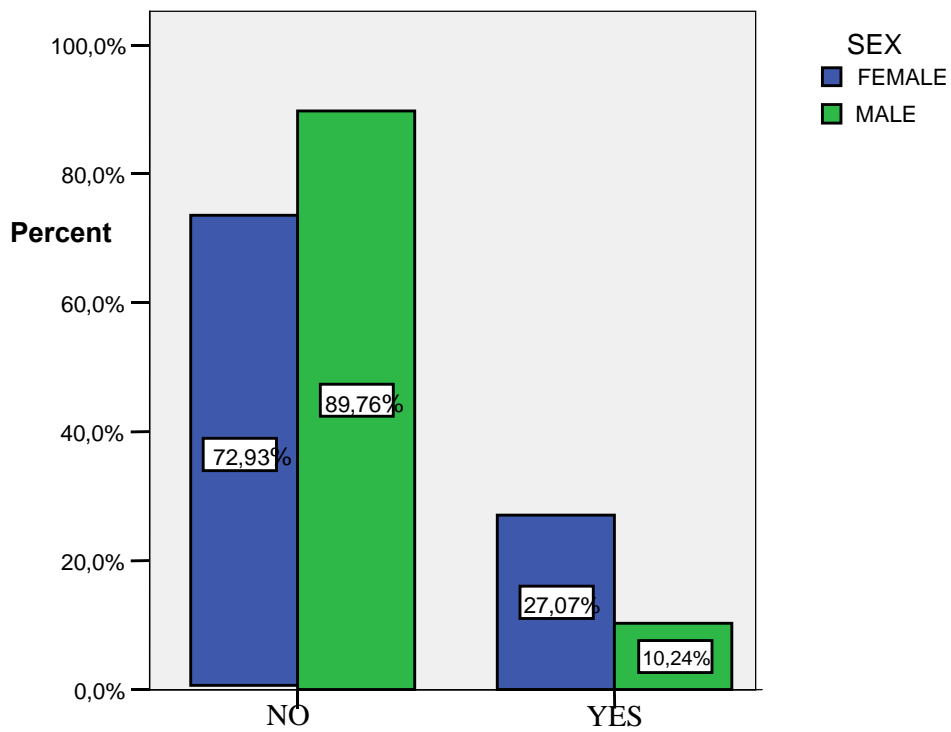


Figure 5 : Distribution of the sample-studied according to Use of Hearing Headsets by Sex