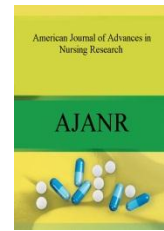




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KNOWLEDGE AND ATTITUDES OF COMMUNITY NURSES TOWARDS ENVIRONMENTAL HEALTH AND DIOXINS

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ABSTRACT

Community nursing is the field of nursing science that promotes healthy environmental behaviors in the community. Nurses who are working in community settings usually provide information to people that raises awareness about environmental issues and their impacts on health; because human health is directly linked with environment and its protection. The purpose of this research study was to assess the level of awareness and knowledge of Greek community nurses about environmental factors that affect health status and the relation between the level of awareness and knowledge and nurses attitudes towards environment and dioxins. The sample of the study consists of 105 nurses that were recruited from health centers located within the broader area of Attica. An anonymous self-administered questionnaire distributed to the nurses. Descriptive statistics such as frequencies, means, percentages and standard deviations are been utilized. Inferential statistics such as Pearson r correlation and regression analysis have been used to determine correlations between relevant variables. Level of significance accepted is $p < 0.05$. Levels of awareness and knowledge of Greek community nurses about environmental issues are high. These levels are statistically related with their attitudes towards environment and dioxins. Moreover higher score of knowledge on environment and dioxins in the group of ages 25++ in opposed those of the group up to 25 y.o. Community nurses in Greece are aware in environmental health issues and are willing to be active participants in environmental health educational programs. Community nurses as healthcare professionals have the knowledge to actively participate on environmental protective actions, to promote environmental sustainability and to contribute in reduction of adverse effects of human activities to the environment by educating people.

INTRODUCTION

According the World Health Organization

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human health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.[1] Human health and quality of life are directly related to the environment and the ecosystem and our survival is linked to them. A variety of human activities



seem to have enormous impacts in the environment, the continuous increasing population, urbanization and industrialization around the world are effecting the quality of air we breathe, the water we drink, the food we eat and the availability of the resources we consume to maintain our lifestyle. The right to a healthy environment requires a healthy human habitat, including clean water, air, and soil that are free from toxins or hazards that threaten human health. [2]

Those impacts that environment may have in human health was recognized by Florence Nightingale back in the 1859. According to her, the environment can be used in order to promote health. Furthermore she indicated the role of the environment in the healing process of injured soldiers during the Crimean War. This knowledge is an underpinning of nursing practice as expressed by Florence Nightingale in her First Rule of Nursing: "Keep the air within as pure as the air without". [3,4] As years followed more and more nurses were occupied by environmental health issues such as Lillian Ward and Mary Breckenridge who tried to indicate the significances of good hygiene and clean water in the reduction of infant mortality. [5]

In nowadays the continuous economic and technologic growth is leading in the degradation of the environment which has a direct effect on human health. The causes of major disasters of the environment are the reckless consumption of natural resources, the constant increasing of waste, the increasing the concentration of carbon dioxide and other harmful gases into the atmosphere and the increasing of consumption of polluting energy sources. The long-term and cumulative exposure to physical, biological, social and chemical agents in air, water, soil, waste, various consumer products and buildings can have a significant impact on health. [6]

One of the major concerns of environmental health is the human exposure on dioxin and dioxin like chemicals and the effects that may have on human health. Dioxin is a general term that is used to describe more than 200 organic chemical substances sharing a similar chemical structure and biological effects. In addition the term dioxin is used also for chlorinated aromatic hydrocarbons including polychlorinated dibenzo-p-dioxins and furans. Dioxins are produced through natural processes such as the burning of forests and volcanic eruptions but also by human activities mainly from industrial procedures. One of the main sources of dioxins is the incomplete combustion of household waste. [7] Dioxins and dioxin like chemical have the ability to act in numerous ways and affect human health. Due to the fact that dioxin are hazardous to human health and there have been in the center of research many times in the course of time. This group of chemicals has often been associated

with various health problems ranging from simple skin ailments and complications to lethal and aggressive forms of cancer and that why it is has been characterized as the chemical AIDS. [8, 9]

It is clear that nursing and environmental health are close related and nurses must be capable to inform individuals and their families about environmental risks. Moreover recognize asses and takes all the necessary measures to prevent environmental hazards that may have impacts in human health. In addition they should report all environmental issues in the proper authorities so necessary actions may take place.[10,11] There for the protection of the environment and the reconstruction of it is a moral obligation that nurses have as healthcare professionals in that way they contribute to health promotion and wellbeing of the community in which they act.[12] Although for many nurses environmental health issues aren't fully understood it is necessary that educational programmers in order basic concepts and action be applied in nursing practice. The increasing participation of nurses in environmental health research can contribute to the embedding of environmental health to all fields of nursing regardless if it is clinical, educational or community based practice. [13]

Propose: This study aims to assess knowledge, attitudes and practices of community nurses in Greece on environmental health issues and Dioxins. Moreover their awareness about these issues will be investigated to. Through this study the environmental knowledge's will be assessed to a profession that due the specific characteristic that has, is demanding the constant interaction with citizens and their education of them in health issues.

MATERIAL AND METHODS

This survey was based on an anonymous self-administered questionnaire distributed to the nurses and was returned anonymously within an envelope in order to assure confidentiality. A cohort of 105 nurses was recruited from health centers located within the broader area of Attica. The inclusion criteria were a) 18 years of age and older; b) ability to speak and read Greek; and c) being a registered nurse or nurse assistant, working health centers. Data were collected in the period of time between January of 2014 and May of the same year. Investigators inspected demographic information to determine that the participants met the inclusion criteria. For those who did not, the data was discarded.

Ethics Written authorization was granted by the ethics and scientific committees of the institutions that this study was conducted. In addition, a written consent statement for their voluntary participation was taken.



Study design: The first step of the research is to identify the objectives and design of the questionnaire. The aim of this survey is to collect empirical data that assess knowledge, attitudes and practices towards the environment and dioxins of community nurses. For this reason, before the establishment of the questionnaire an extensive literature research was conducted, mainly on environmental health and dioxins affecting the profession of community nursing. The reasons that community nurses were the selected population for this survey are two. First of all community nurses have the goal to preserve and maintain health so they have to promote and work for healthy environments and the second reason is that community nurses are in a constant interaction with people in their natural environment (community) without the influence of other stressful situations (active pathology) so having the ability to give examples from their everyday lives.

After reviewing the current literature a four section questionnaire was designed consisted by:

A. Demographic data.

Questions assessing:

B. Knowledge of environmental health and dioxins.

C. Attitudes towards the environment and dioxins.

D. Practices towards the environment and dioxin.

The questionnaire was consisted by mostly by questions with 5 likert scale answers along with yes/no and multiple choice answers. A pilot study was initial conducted in order to detect: a) if the questions are understood, b) whether each question provides information for which was selected for c) to ensure the interest and cooperation of respondents. After the necessary corrections and final check the questionnaires' was distributed.

The initial goal was to produce six scales: one for each group of knowledge, attitudes and practices towards the environment as a whole and one for each subgroup specific to the issue of dioxins. The tested reliability of data by the method of Cronbach's alpha and further examined the values of correlations (Pearson) between every two questions. The required degree of reliability and the required value of correlation between the items defined according other studies. [14, 15]

After testing the reliability the following five scales were accepted:

- Knowledge ($\alpha = 0.712$ and $\min r > 0.39$)
- Practices ($\alpha = 0.765$ and $\min r > 0.08$)
- Knowledge on dioxins ($\alpha = 0.678$ and $\min r > 0.4$).
- Attitudes on dioxin ($\alpha = 0.692$ and $\min r > 0.317$)
- Practices toward issues involving dioxins ($\alpha = 0.771$ and $\min r > 0.464$)

Analysis and data processing:

All valid data was entered into a spreadsheet

format, and analyses were performed using IBM SPSS Statistics for Windows, Version 22.0, conducting the following tests

- Descriptive statistic.
- Checks on equality averages between two or more groups (Student's T-test, ANOVAs).
- Correlation between the scales produced (Spearman Non-Parametric).

Demographic structure of the sample:

From the total of 105 nurses, 6.7% were male and 93.3% were females with a mean of years of work experience 16 ± 9.2 . In addition 59.6% were married, 30.8% single, 8.7% divorced and 1% were widowed. Regarding the educational status of our sample 60.6% had received higher education and 11.6% had postgraduate education and only the 27.9% had a high school degree. (Table 1.) It's worth to be mentioned that the 67.6% of the participants are seeking information regarding environmental issues mostly via internet stating clear the tendency that people have for a pluralistic sources of information.

Correlation between scales

Due the fact that the sample did not follow a normal distribution, non-parametric tests for correlation between the total score of the five scales were conducted. (Spearman's Rho, Kendall's Tau B) Upon the examination of the correlation, we observed a statistically significant correlation between the scale of knowledge and attitudes scales ($r = 0.196$, $p = 0.009$) and attitudes on dioxins ($r = 0.284$, $p = 0.000$). Also a statistically significant correlation between score of knowledge on dioxins and the score of general environmental attitudes ($r = 0.165$, $p = 0.030$) was observed. Moreover the score of knowledge on dioxins and the score of the scale of practices towards dioxins, exhibit a positive correlation ($r = 0.270$, $p = 0.001$).

Comparison between scores in distinct groups

To make an in-depth investigation of differences in levels of knowledge, attitudes and beliefs that may show the distinct groups of respondents, statistical tests of comparison between the mean of scales in each group were conducted.

Lavene and T-test were contacted in order to compare means between sex and residence of the respondents. Upon the examination no differences were found in the means of scales score regarding the pairs male- female (minimum $p > 0.266$) and area of residence urban – suburban (minimum $p > 0.447$).

One-way ANOVA test was conducted in order to exam possible differences in means of the scales scores, in various groups of our sample. This comparison didn't

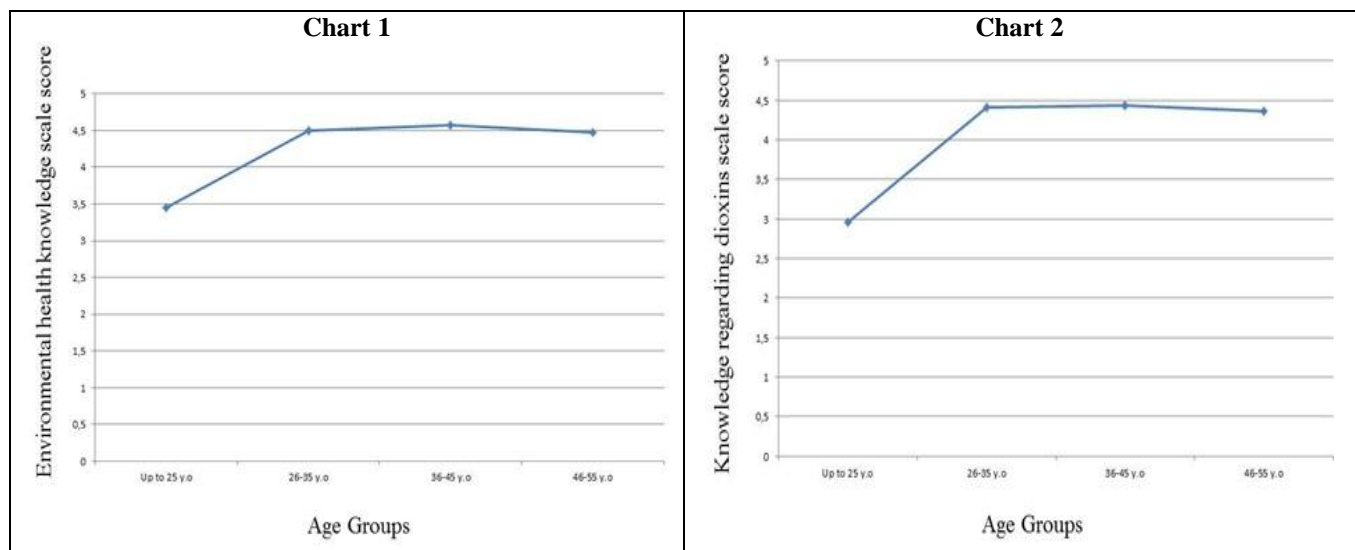


revealed any statistically significant difference except scale of knowledge ($F=9.50$, $p=0.000$) and knowledge about dioxins ($F=17.31$, $p=0.000$) in the subgroups of ages. So a closer examination of those two scales in age groups was required. The post hoc analysis of the above results demonstrate a significant difference in the mean of

those two scales ($p = 0.000$ in both cases) between the “up to 25 y.o” group compared with others age groups. (Charts 1 and 2.) The comparison between marital status and level of education didn’t reveal any significant difference.

Table 1. Demographic structure of the sample

<i>Age Groups</i>	%	N
Up to 25 yo	8.6	9
26-35	24.8	26
36-45	34.3	36
46-55	32.4	34
56 +	0.0	
<i>Sex</i>		
Male	6.7	7
Female	93.3	97
<i>Educational level</i>		
High school	27.9	29
University	60.6	63
Post Graduate	11.6	12
<i>Marital Status</i>		
Single	30.8	32
Married	59.6	62
Divorced	8.7	9
Widowed	1.0	1
<i>Head Nurse</i>		
Yes	22.3	23
no	77.7	80
<i>Residence</i>		
Urban	65.4	68
Suburban	34.6	36



DISCUSSION AND CONCLUSIONS

The new millennium has brought in fore scene new problems and environmental risks but also carried new prospective in order Community nurses and public health workers to harmonize health and environmental sustainability. It is now understood and accepted that the environment plays an important role in our health, our quality of life and the sustainability of the planet. The continuous increase of the population, urbanization and industrialization threatens our planet and the ecosystem, affecting the air, water and the food we eat. Furthermore new chemical substances and the development of industry raise risks to human health and the ecosystem. Facts indicated in our research along with international data and professional position statements. [11, 12]

The development of technology and the need for comprehensive information is leading nurses and healthcare professionals in search for pluralistic forms of renovation. Results of this study are supported by previous study contacted in nurses regarding environmental issues indicating that more and more nurses are using Internet for their information in opposed to the past years dominated by television and more traditional forms such as newspapers. [16]

Environmental education of Greek nurses differs significantly from that at the international level. In a survey contacted in Canada in 2008 the 40% of respondents had been involved in environmental education programs [17], according to our findings only 20% of the respondents had environmental education and only 2% of the the respondents evaluate the training that had received in environmental issues as good.

Generally speaking from a global point of view, nurses as health care professionals seem to be aware in environmental health issues and are willing to be active participants in environmental health educational programs. Fact that is supported by the results of the present study in addition to others studies in Greece and abroad.[17,18] Overall, the participants in this study seem to be aware in environmental problems and show willingness to take part in actions for the reduction of these problems. Respectively are the findings of previous surveys. [16]

Despite the fact that there is a growing trend for environmental health and its promotion to be incorporate in various professions that have the task of informing the public, practical difficulties seem to arise during this process. The lack of interest by the citizens for starter combined with an enormous workload, are condemning such movements to be stillborn. If the lack of education on environmental issues be add up to all above then present barriers are created in the process of environmental awareness of citizens. These results were consistent to the research of Carol Van Dongen back in

2002 as well as the results Elison-Bowers in 2011 that her research is in fact a follow up of Van Dongen research.[19,20] Moreover special interest has the positive correlation between knowledge and attitudes towards the environment, which reinforces the already prevalent idea of improving environmental awareness through the proper informing of citizens. Noteworthy was the abundance and variety of petitions in human factors and risks for the environmental balance, as it was stated by the participants. [16-20]

It is a fact that dioxins as an environmental problems have got vast expanse in recent years and indeed this is a matter which comes to the fore periodically. Despite the publicity has gotten there are few research considering this matter or knowledge and attitudes that have nurses and other health professionals have on it. Despite the lack of research in this field, many health professionals such as doctors and nurses worldwide seem to be aware of dioxins and their impacts on human health. Publications, reports and even a letter to the President of the U.S.A asking him to take action on this issue have been published in recent years. Dioxins are a subject that appears to concern community nurses in Greece which is shown by the high scores in the scales of knowledge and attitudes towards dioxins of the present study. The most common exposure in dioxin is via food and according to our results educational programs seem to have a positive effect on the awareness of the public as it is supported by the results from other surveys.[21]

Epilogue: Maintaining and improving the environment is vital to humans welfare. Therefore nurses as healthcare professionals have the moral obligation to actively participate in environmental protection actions, promoting environmental sustainability and by reducing all adverse effects of human activities to environment. Community nurses are determent an important role in the evaluation of the impacts that the degradation of the environment has on human health. They must be aware of environmental issues and apply their knowledge on environmental risks when they're working in the community. They must be able to inform the public on the preventive measures that should be taken about environmental risks. Furthermore in collaboration with relevant health agencies they must highlight all these aspects of the environment that are related to human health. In addition their participation in activities that local community is conducting, regarding the environmental health issues is necessary to. Finally, the contribution to the research by providing information relating to the effect on the environment on human health and the impact of human exposure to various pollutants [22,23].

Limitations: Limitations of the research should be noted



to put the findings into a broader context. The sample of nurses in this study was small (n=105). It was impossible to determine the representativeness of those nurses that participated. All data were collected using self-report questionnaires raising the possibility of response set

tendencies. In combination with the observed imbalance of respondents in the various subgroups of the sample (age, education level, etc.), where there are extreme disparities between populations.

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