



The Effect of Parents' Education on the Prevalence of Acute Leukemia in Children

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Abstract

Background: Cancer is one of the most common causes of death in children. The aim of this study was to evaluate the effect of parents' education on the prevention of leukemia in children.

Methods: This study was a survey performed in Mahak and Bahrami hospitals in 2019. Checklists were completed in two groups of parents, those who had a child with leukemia and those who had a healthy child. Data were analyzed by SPSS statistical software.

Results: In this study, 365 individuals in the healthy group and 81 in the cancer group participated. More than sixty percent (62.3%) were females. The highest frequency of age in both groups was 31 - 40 years. The highest frequency of parents' education in the healthy group was associate degree and bachelor (about 51%) and in the cancer group, lower than associate degree (about 73%). There was a significant relationship between parents' education and the prevalence of leukemia in children ($P < 0.05$).

Conclusions: Based on the study, parents' higher education can be effective in preventing the development of leukemia in children.

Keywords: Children, Education, Leukemia, Parents

1. Background

Cancer is the third leading cause of death after cardiovascular disease and accidents (1). The prevalence of this disease is expected to increase in the coming years. The prevalence of malignancy in our country is about 100 people per 100,000 (2). The most common childhood malignancy is leukemia (with an incidence of 8 - 62 people per million) (3). In developing countries like ours, children with malignancies need more attention. This is especially important so that 85% of children with the disease have a chance of recovery (4). Cancer can be prevented by raising awareness about its causes. The incidence of cancer can be reduced and controlled by implementing evidence-based strategies for prevention, early detection, and treatment management.

There are two main factors involved in the development of malignancy: genetic and environmental. Environmental factors include the items we come in contact with on a daily basis, such as the air we breathe, the water we drink, the food we eat, and the lifestyle we choose in general (3). The prevalence of malignancy and even its type is related to different lifestyles in different countries. Interestingly, these environmental factors play a greater

role in cancer than genetic factors, and these factors are so influential that even immigrants, regardless of their genetic background, are exposed to carcinogens in the new environment, just like the native people (5). Malignancies can be prevented up to half of the cases by changing dangerous environmental factors and improper lifestyles (6). For example, quitting smoking, eating healthy foods, and avoiding exposure to carcinogens can reduce the incidence of cancer. Parents should normally be aware of the causes of malignancy, so it is very important for parents to have a higher education. Identifying malignant manifestations, educating, informing, and raising public awareness to change lifestyles, reduce environmental risk factors are of particular importance. In scientific literature, there are limited studies evaluating the effect of education on the prevention of malignancy. On the other hand, there is disagreement among those studies (7).

2. Objectives

We aimed to evaluate the effect of parents' education on the prevention of leukemia in their children in a cross-sectional study.

3. Methods

3.1. Type of Study

This is a survey method. (This is a method of collecting data in which certain groups are asked to answer a certain number of questions that are the same for everyone.) The study population included parents of children with leukemia (as the cancer group) and parents of healthy children (as the healthy group). The sampling method was stratified sampling, in which simple random sampling or easy sampling was done within the categories. The sample size was calculated for the cancer group to be 356 using the Cochran's formula, and for the healthy group to be 384 using the Morgan table. Finally, 81 and 365 individuals participated, respectively. This study was conducted in 2019 (spring and summer) in Mahak and Bahrami hospitals of Tehran (in Iran).

Inclusion criteria include: (1) Parents of children under 16 years of age with acute leukemia who lived in Tehran and had no history of contact with ionizing agents and pesticides. (2) Parents of healthy children under 16 years of age who lived in Tehran without any specific disease.

Exclusion criteria include: People with a family history of malignancy in the first generation, a history of chronic infectious diseases, and a history of chronic medications consumption.

3.2. Data Collection

In this study, quantitative data were registered in a checklist. It included demographic information such as age, gender, level of education, number of children, and family history of the disease. This information was asked by the researcher from both groups and filled in the checklist.

3.3. Statistical Analysis

The data collected through the checklist were analyzed by SPSS software version 22. The chi-square test was used to analyze the nominal qualitative data. Statistical methods and tests have been used to examine the research questions according to the level of measurement of variables.

4. Results

In this study, 365 persons in the healthy group and 81 in the cancer group participated of whom 16 and 4 individuals did not answer the questionnaire, respectively. Overall, 62.3% (278 persons) were females. The highest frequency of age in both groups was 31 - 40 years. Most families in this study had two children. [Table 1](#) shows the frequency distribution of parents' education levels in both groups.

According to our results, the parent's education levels in the healthy group were 50.7% for associate and bachelor degrees, 23.5% master's degrees, and 0.6% seminary education, and in the cancer group, 72.7% had an associate degree and lower, and 7.8% had a master's degree. According to the Pearson chi-square independent test, there was a statistically significant relationship between parents' education and the prevalence of malignancy in children ($P < 0.05$). This means that higher education in parents reduces the risk of cancer in children ([Table 1](#)).

5. Discussion

In epidemiological studies, genetic, infectious, and environmental factors are possible risk factors for acute leukemia in children. Environmental risk factors include ionizing radiation, non-ionizing radiation, hydrocarbons, pesticides, alcohol, cigarettes, and illicit drug use ([8](#)). In our study, environmental risk factors were the same in both groups.

According to the present study, there was a relationship between parents' education and the prevalence of leukemia in children, and this relationship was statistically significant using the independence test. People with lower education were more likely to have a child with cancer. This finding is consistent with the theories of Ticker, Donohue, and McQuail. According to Ticker's and Donohue's theories, education level, income, and job can play an important role in receiving information in the shortest time. People with higher levels of education receive more information about public issues from the media over time than people with lower levels of education ([9](#)). There is a correlation between education level and information ([9](#)). According to McQuail theory, in the same information sources, acquisition of knowledge by people with higher education is much more than people with lower education ([10](#)). Based on these theories, people with higher education are more aware of different issues. In the study of Ghulami et al., coincident with our results, a statistically significant relationship was observed between the level of education of parents and acute leukemia in children ([11](#)). Heck et al. found that there was a relationship between higher education and the prevalence of breast cancer; thus, people with higher levels of education were more likely to develop cancer. However, in the end, considering other known risk factors, this relationship was not properly confirmed ([7](#)). Aminian et al. also showed that people with higher education had better information about lung cancer ([12](#)). The results of this study are the same as our results. On the other hand, the findings of this study were consistent with the theory of media and audience relations ([10](#)). In this

Table 1. The Frequency Distribution of Parents' Education Levels in the Healthy Group and Cancer Group ^a

Groups	Parental Education Level						No Answer	Total
	Diploma	Associate, Bachelor Degree	Master Degrees	Doctorate Degrees	Seminary Degrees	Total		
Healthy	78 (22.3)	177 (50.7)	82 (23.5)	10 (2.9)	2 (0.6)	349 (100)	16	365
Cancer	56 (72.7)	15 (19.5)	6 (7.8)	0 (0.0)	0 (0.0)	77 (100)	4	81
Total	134	192	88	10	2	426	20	446

^a Values are expressed as No. (%).

theory, highly educated audiences are motivated to choose and use communication channels such as the media (10).

5.1. Conclusions

According to the results of a recent study, parents' higher education can be effective in preventing the development of leukemia in children. Therefore, it is suggested to increase the level of social awareness to help prevent malignancy, especially in children, which is achieved with the help of mass media and higher education institutions.

Footnotes

Authors' Contribution: All authors were equally involved in this article.

Conflict of Interests: The authors have no conflicts of interest relevant to this article to disclose.

Ethical Approval: The study was approved by the Ethics Committee of Tehran University of Medical Sciences.

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