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# Factors Related to the Choice of Place of Death in Deceased Patients due to Cancer from 2011 to 2017 with Hospitalization Background in Firoozgar Hospital

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## Abstract

**Background:** Death in the place that the patient has selected and feels comfortable remaining in for the remainder of their life is one of the main objectives of palliative care for terminally ill cancer patients. Nevertheless, this problem is constantly disregarded. The goal of the present study was to look at variables that affected cancer patients' decisions about their place of death.

**Methods:** A descriptive cross-sectional study was conducted from May to August 2018. Using a continuous sampling method, 631 patients who had passed away between 2011 and 2017 were selected among the patients with a history of cancer and hospitalization at the Firoozgar Hospital in Tehran. A self-made 3-section questionnaire with 21 questions was completed by phone calls made to the families who confirmed their patients' deaths due to cancer. Data were managed by SPSS software Version 13, and descriptive statistics were used in data analysis.

**Results:** Based on the results, among 631 deceased patients, only 157 (24.9%) chose their place of death, and 474 (75.1%) had not spoken about it during their lifetime. Among the examined variables, age, sex, education, insurance status, duration of disease, activities of daily living, awareness of disease progression, and receiving home care had a significant association with this choice in people who died of cancer.

**Conclusion:** Despite the importance of the choice of place of death by the patient in the final days of life, the possibility of having an option is not provided for most cancer patients.

Patients who understand how their disease is progressing at this point are probably going to want to select where they pass away. Consequently, the healthcare system must be ready to grant cancer patients the option to choose their final resting place and ensure a comfortable and respectable passing. Future research can be built upon the results of this study.

**Keywords:** Place of death, End-of-life care, Palliative care, Death, Cancer, Preferred place of death

***Conflicts of Interest:*** *None declared*
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## Introduction

Cancer is a major public health problem and one of the leading causes of death worldwide. Nearly 10 million

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***↑What is "already known" in this topic:***
Creating peace and comfort for a dignified death is one of the primary rights of patients who are in the final stages of their illness. One of the issues that bring peace and easy death to these patients is talking to them about the place of death, choosing the place of death by themselves, and finally spending the last days of life in the place that they chose.

***→What this article adds:***
Despite the importance of the patient's choice of place of death in the final days of life, we found that most cancer patients do not have the opportunity to make a choice. No study has been conducted on choosing the place of death, the preferred place of death, and finally, death in the preferred place in Iran. The results of this study are used as a base for future research in this field.

people died of cancer in 2020, and this number will increase to 24 million by 2035 (1). Cancer is the second leading cause of death in Iran. Based on the estimation provided by the Global Cancer Observatory, the incidence of all cancer types in Iran was 131,191 in 2020, and this number is expected to increase to 154,000 cases in 2025 (2). Medical advances in the treatment of advanced cancers and increasing survival rates in recent years have formed a large group of cancer patients who need palliative care during the end of life (3). One of the most essential aims of palliative care is to increase the quality of life and even the quality of death. Therefore, creating peace and comfort for a dignified death is one of the primary rights of these patients. One of the issues that brings peace and easy death to these patients is talking to them about the place of death, choosing the place of death, and spending the last days of life in the place that they chose (4, 5). Patient's autonomy and choosing the place of death is not only considered one of the major rights of the patient and their family but also an important indicator for evaluating end-of-life care (6, 7). This choice is related to 3 categories of factors*:* demographic, socioeconomic, and disease characteristics (8). It should be considered that talking to patients about death is very complicated and sensitive and may provoke negative feelings in the patient and family, leading to sadness and anxiety. Hence, it requires the presence of professionals and skilled individuals in this field (9).

Due to the significance of caring in the final days of life and choosing the place of death by the patient, the researcher's experience in this field as a nurse and communication with patients who have spoken about the place of their death, and the lack of study in this field in Iran, it seems necessary to address the topic of choosing the place of death by the patient. The present study aimed to assess the choice of place of death and its related factors in patients who died of cancer in Iran.

## Methods

This descriptive cross-sectional study was conducted to partially fulfill the requirement for the Master of Science degree in Community Health Nursing. Iran University of Medical Sciences approved this study. Participants were 631 patients who had died of cancer and had hospitalization backgrounds at Firoozgar Hospital, affiliated with the Iran University of Medical Sciences.

The instrument was a researcher-made questionnaire. The content validity of the questionnaire was checked by seeking the opinion of 4 experts—4 faculty members of the School of Nursing and Midwifery, Iran University of Medical Sciences. Based on the comments received, 1 question about “accessing home health care” was added to the questionnaire and finally approved by the professors. This study did not seek to assess a specific concept and a large part of the questionnaire comprised demographic characteristics. Therefore, there was no need to determine the reliability.

The questionnaire contains 3 sections and 21 questions. The first section included the demographic and socioeconomic information of the deceased patient (11 questions) involving age, sex, location of residence (Tehran or other cities), occupation, marital status, number of children, relationship of the patient with the people living with them, education, economic status, and having health insurance. The second section (5 questions) included the characteristics of the disease: type of cancer, duration of disease, activities of daily living in the final days of life, awareness of the deceased of the progression of their disease during their lifetime, and the number of times they received home care. The third section included information related to death (5 questions) consisting of the reason for death, place of death, year of death, choosing or not choosing the place of death, and preferred place of death.

### *Sampling and Participants*

Based on the following formula and according to the preceding study cases (10), sampling continued continuously to achieve the desired sample size.

$$n = \frac{z^2_{1-\alpha/2}\, pq}{d^2}$$

$$n = \frac{1.96^2 * 0.5 * 0.5}{0.04^2} = 625$$

The participants were the families of 631 people who had died of cancer from 2011 to 2017 and had hospitalization backgrounds in Firoozgar Hospital, affiliated with the Iran University of Medical Sciences.

### *Data Collection*

After obtaining approval from the ethics committee of Iran University of Medical Sciences, we referred to the medical records unit of Firoozgar Hospital. The list of patients with a history of hospitalization with a diagnosis of cancer and their information was accessed on the computer system. Then, the questions related to age, sex, place, place of residence, health insurance, and type of cancer were completed using the information available on the computer system. To complete other questions, the researcher called their families; after providing the necessary explanations about the research given to an adult family member and after obtaining verbal consent, the informed consent was sent to them through the WhatsApp application or emailed. Participants were asked to sign the consent within 2 days and send it back to the researcher via WhatsApp or email. After receiving consent forms, participants were called again for an interview.

It was conveyed to them that they could stop talking if they were pregnant, in an unpleasant situation, suffering from heart illness, or experiencing mental health issues. As the patient's death from cancer was a requirement for inclusion in the study, we began the interview by asking, "Is your patient currently under treatment?" since we had no idea if the patient was still alive. The participant would only need to answer the remaining questionnaire questions if they confirmed that their patient had passed away (at least 6 months prior) and expressed their willingness to participate in the study. Three to 5 minutes were allocated for a conversation with each participant.





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### Statistical Analysis

Data analysis was conducted using descriptive statistics, which included the frequency and percentage of the patients who had chosen their place of passing during their lifetime. The chi-square test was used to determine the relationship between demographic, socioeconomic factors, and disease characteristics by selecting their place of death. Logistic regression analysis was utilized to identify the most significant aspects of choosing a place of death. The data were analyzed using SPSS 13 software.

## Results

From 950 families who were contacted, 631 families whose patients had died of cancer between 2011 and 2017 met the inclusion criteria and were included in the study. The mean age of the sample was 42.77±11.46 years. All of them resided in Tehran, with 282 (44.4%) living in the city's southern region. Men comprised 311 (50.7%) of the total, and 377 (59.7%) were married. The majority of participants had average economic levels (264 [41.8%]), 186 [29.5%] had only completed high school, and 294 [46.5%] were retired.

The reason for all death was cancer, and the most reported cancer was gastrointestinal (242 [38.4%]). The results showed that among the 631 patients, 474 (75.1%) had not spoken about the place of their death, and only 157 (24.9%) had chosen the place of their death.

As indicated in Table 1, demographic characteristics, including age and sex, were significantly correlated with the choice of place of death in those who died of cancer with a history of hospitalization in Firoozgar Hospital ($P < 0.05$). Nevertheless, there was no statistically significant correlation between the patients' choice of place of death and their marriage status, child status, or familial relationship with their surviving relatives.

As demonstrated in Table 2, socioeconomic factors, education, and health insurance were significantly correlated

*Table 1.* Comparison of demographic factors of people who died of cancer, based on their choice of place of death (2011-2017) n = 631

| Demographic Factors | | Choice of Place of Death | | | | $X^2$ * Test result |
|---|---|---|---|---|---|---|
| | | Yes | | No | | |
| | | Number | Percentage | Number | Percentage | |
| Age(year) | <50 | 37 | 23.6 | 101 | 21.3 | $X^2$10.40 |
| | 50-59 | 27 | 17.1 | 62 | 13.1 | Df=4 |
| | 60-69 | 18 | 11.5 | 108 | 22.8 | $P$=0.034 |
| | 70-79 | 57 | 36.3 | 146 | 30.8 | |
| | 80 ≥ | 18 | 11.5 | 57 | 12 | |
| Sex | Male | 89 | 56.7 | 222 | 46.8 | $X^2$=4.58 |
| | Female | 68 | 43.3 | 252 | 53.2 | Df=1 |
| | | | | | | $P$=0.030 |
| Marital status | Married | 81 | 51.6 | 269 | 62.4 | $X^2$=5.81 |
| | Single | 24 | 15.3 | 54 | 11.4 | Df=2 |
| | Widow | 52 | 33.1 | 124 | 26.2 | $P$=0.054 |
| Having Children | Yes | 131 | 83.4 | 418 | 88.2 | $X^2$=2.35 |
| | No | 26 | 16.6 | 56 | 11.8 | Df=1 |
| | | | | | | $P$=0.120 |
| Relationship of the relative who the patient was living with | Grandfather Grandmother | 2 | 1.3 | 12 | 2.5 | $X^2$=5.59 Df=3 |
| | Father. mother | 22 | 14 | 44 | 9.3 | $P$= 0.130 |
| | Spouse. child | 130 | 82.8 | 369 | 83.5 | |
| | Other | 3 | 1.9 | 22 | 4.7 | |

*Chi-squared test

*Table 2.* Comparison of socioeconomic factors of people who died of cancer, based on their choice of place of death (2011-2017)

| Socioeconomic Factors | | Choice of Place of Death | | | | $X^2$ * Test result |
|---|---|---|---|---|---|---|
| | | Yes | | No | | |
| | | Number | Percentage | Number | Percentage | |
| Residence in Tehran | North | 16 | 9.6 | 42 | 8.9 | $X^2$=0.55 |
| | South | 73 | 46.2 | 209 | 44.1 | Df=3 |
| | West | 40 | 25.6 | 135 | 28.6 | $P$=0.900 |
| | East | 29 | 18.6 | 87 | 18.4 | |
| Occupation | Retired | 65 | 41.4 | 229 | 48.3 | $X^2$=2.3 |
| | Employed | 22 | 14 | 61 | 12.9 | Df=2 |
| | Unemployed | 70 | 44.6 | 184 | 38.8 | $P$=0.310 |
| Education | Illiterate | 38 | 24.2 | 85 | 17.9 | |
| | Elementary | 41 | 26.1 | 141 | 29.7 | $X^2$=9.12 |
| | High school | 35 | 22.3 | 151 | 31.9 | Df=3 |
| | Higher education | 43 | 27.4 | 97 | 20.5 | $P$=0.028 |
| Economic status | Very good | 8 | 5.1 | 32 | 6.8 | |
| | Good | 39 | 24.8 | 130 | 27.4 | $X^2$=6.35 |
| | Middle | 59 | 37.6 | 205 | 43.2 | Df=3 |
| | Bad | 41 | 26.1 | 87 | 18.4 | $P$=0.170 |
| | Very bad | 10 | 6.4 | 20 | 4.2 | |
| Health insurance | Insured | 136 | 86.6 | 438 | 92.4 | $X^2$=4.79 |
| | not insured | 21 | 13.4 | 36 | 7.6 | Df=1 |
| | | | | | | $P$=0.029 |



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*Table 3.* Comparison of characteristics of the disease of people who died of cancer, based on the choice of their place of death (2011-2017)

| Characteristics of the Disease | | Choice of Place of Death | | | | $X^2$ * Test result |
|---|---|---|---|---|---|---|
| | | Yes | | No | | |
| | | Number | Percentage | Number | Percentage | |
| Type of cancer | Gastrointestinal | 60 | 38.2 | 182 | 38.4 | $X^2$=17.72 |
| | Breast | 18 | 11.5 | 49 | 10.3 | Df=10 |
| | Lung | 9 | 5.7 | 50 | 10.5 | P=0.059 |
| | Bladder and uterus | 9 | 5.7 | 37 | 7.8 | |
| | Kidney | 8 | 5.1 | 21 | 4.4 | |
| | Thyroid | 9 | 5.7 | 18 | 3.8 | |
| | Brain | 1 | 0.7 | 20 | 4.2 | |
| | Throat | 7 | 4.5 | 17 | 3.6 | |
| | Prostate | 10 | 6.4 | 35 | 7.5 | |
| | Leukemia | 22 | 14 | 31 | 6.5 | |
| | Ovary | 4 | 2.5 | 14 | 3 | |
| duration of disease | <1 | 8 | 5.1 | 71 | 15 | $X^2$=13.3 |
| | 1-4 | 68 | 43.3 | 199 | 42 | Df=3 |
| | 5-9 | 64 | 40.8 | 175 | 36.9 | P=0.004 |
| | 10≥ | 17 | 10.8 | 29 | 6.1 | |
| Activities of Daily Living | Independent | 9 | 5.7 | 128 | 27 | $X^2$=40.48 |
| | Relatively dependent | 80 | 51 | 139 | 29.3 | Df=1 |
| | Completely dependent | 68 | 43.3 | 20.7 | 43.7 | P<0.001 |
| Awareness of disease progression | Yes | 137 | 87.3 | 157 | 33.1 | $X^2$=138.91 |
| | No | 20 | 12.7 | 31.7 | 66.9 | Df=1 |
| | | | | | | P<0.001 |
| receiving home care | Not receiving | 90 | 57.3 | 34.1 | 72 | $X^2$=13.74 |
| | Once | 4 | 2.5 | 10 | 2.1 | Df=4 |
| | Twice | 12 | 7.7 | 24 | 5.1 | P=0.008 |
| | Thrice | 11 | 7 | 31 | 6.5 | |
| | More than three times | 40 | 25.5 | 68 | 14.3 | |

*Table 4.* Logistic regression analysis to investigate the factors related to the choice of place of death of people who died of cancer with a history of hospitalization in firoozgar hospital (2011-2017)

| Independent variables | | Coefficient B | Standard coefficient | Test statistics | OR | *P* value |
|---|---|---|---|---|---|---|
| Age | <50 | -0.95 | 0.45 | 4.30 | 0.38 | 0.038 |
| | 50-59 | -0.54 | 0.48 | 1.24 | 0.58 | 0.260 |
| | 60-69 | -1.42 | 0.48 | 8.7 | 0.24 | 0.003 |
| | 70-79 | -0.24 | 0.40 | 0.35 | 0.78 | 0.550 |
| | ≥80 | | | Reference category | | |
| Gender | Male | 0.61 | 0.23 | 6.78 | 1.85 | 0.009 |
| | Female | | | Reference category | | |
| Health insurance status | Insured | -0.93 | 0.37 | 6.15 | 0.39 | 0.013 |
| | Not insured | | | Reference category | | |
| Activities of Daily Living | Independent | -0.87 | 0.45 | 3.80 | 0.41 | 0.051 |
| | Relatively dependent | 0.59 | 0.26 | 5.16 | 1.8 | 0.023 |
| | Completely dependent | | | Reference category | | |
| Awareness of disease progression | Yes | 2.91 | 0.31 | 88.28 | 18.45 | 0.001< |
| | No | | | Reference category | | |

with the choice of place of death in those who died of cancer with a history of hospitalization in Firoozgar Hospital ($P < 0.05$). Geographical, occupational, and socioeconomic level factors did not significantly correlate with the choice of death location.

Table 3 shows that among the variables of the disease characteristics, the length of the disease, type of activity, awareness of the disease progression, and receiving home care, there was a significant relationship with the choice of place of death in patients who died of cancer and had previously been hospitalized at Firoozgar Hospital ($P < 0.05$). Only the type of cancer did not have a significant relationship with the choice of place of death.

According to the results of logistic regression analysis, indicated in Table 4, all variables in this table showed a significant relationship with the choice of the place of death. Among them, the awareness of disease progression is the most important variable related to this choice; thus, the number of patients who were aware of their disease progression and chose their place of death was 18.45 times the number of those who were unaware of their disease progression.

## Discussion

This descriptive cross-sectional study indicated that most patients did not choose their place of death. Unlike our results, the results of a 2007 research conducted in the Netherlands indicated that most of the patients spoke about their death in the final months; thus, from 103 patients, 72 patients chose their place of death, and only 31 patients did not talk about their place of death (11). Nonetheless, the findings of a study conducted in the United Kingdom were comparable to those of the present study. Similarly to our study, the families of the deceased patients provided data, and only roughly one-third of the deceased patients discussed this issue (12).

The results of these 2 studies were different from those of ours, as the patients were the data source, and the pa-





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tients themselves were questioned about the place of death, whereas in the study whose results were similar to ours, the patients were not the source of information. It appears that asking patients about their own mortality influences their decision on the place of death since it forces them to consider it.

On the other hand, some of the patients and families did not accept death for a variety of reasons, including religious beliefs and hope up to the last moments (13). This shows that it is essential to educate nurses about proper communication with the patient in the last days of life and to create an opportunity to talk about this issue because nurses are considered the front line in healthcare and are often present during the death of a patient as a support for the dying person and the family (14).

The findings of this study suggest that age and sex have an impact on the place of death. As a result, the 70–79-year-old age group (36.3%) talked about and selected their place of death more than the other age groups. These findings suggest that as people age, they become more contemplative about death, so it is essential to take into account the possibility of allowing this age group to talk about the place of death more than other groups.

It appears that patients who are 80 years old are not able to choose where they will die due to their physical state and state of mind. Also, men talked about this matter more often. Because no study has been conducted in Iran, it was determined that the factors related to the choice of place of death must be investigated primarily. Studies in reliable scientific references showed that the patient is the main focus of research on choosing the place of death (hospital, home, or elsewhere).

The study's findings show that literate and highly educated individuals primarily choose their place of death due to socioeconomic status, insurance, and educational attainment.

However, patients with elementary, middle, and high school education did not talk about the place of death. Those without insurance were also commented on the place of death.

This research indicated that among the characteristics of the disease, activities of daily living, duration of involvement with the disease, and awareness of prognosis are related to the choice of place of death. The patients who, in their last months of life, were relatively dependent on others in terms of activity and performance chose their place of death. Thus, >50% of the patients who chose their place of death were relatively dependent. Those who had passed away more than a year from the time of diagnosis had significantly spoken about the place of their death before their death. Among 79 patients who had had the disease for <1 year, only 8 chose their place of death, and the rest did not. Also, both those who did and did not receive home care during their lifetime had spoken about their place of death. At the same time, those who did not receive any care (57.3%) chose their place of death more than those who did receive care. Those who were aware of the prognosis of their disease also chose their place of death; thus, out of the total of 157 patients who had chosen their place of death, 137 (87.3%) were aware of the progression of their disease.

Awareness of disease progression was the most significant variable in choosing the place of death. It seems that patients who have been diagnosed for a short time will find it difficult to talk about death because they may be in the denial phase; consequently, these patients will probably not have a choice of place of death. Patients who have had the illness for a long time and those who are aware of the progression of their disease are more likely to talk about the place of death because they are tired of their condition and have accepted that their illness may lead to death. More research is needed to understand and put into practice best practices in facilitating appropriate end-of-life communication, even though planning such matters for patients who have died requires the involvement of trained and skilled nurses and physicians due to the high sensitivity of the subject (15). Not many papers examined the association between socioeconomic, demographic, and illness features with selecting the place of death, despite a wealth of research on reliable scientific references. Therefore, with the stated objective, this research can serve as an introduction to more investigations in the future.

We attempted to address the study's limitation—that of potentially inaccurate data resulting from the use of deceased samples—by enlisting the family member who had the most amount of interaction with the deceased as a source of information.

## Conclusion

Despite the importance of choosing the place of death by patients in the last days of life, the results showed that this opportunity was not provided for most of the patients during their lifetime. This is because patients who are aware of their disease progression are likely to want to choose their place of death. Therefore, it is necessary to prepare the healthcare system to give the patients the right to select the place of death and provide a good and dignified death for cancer patients. This study highlights the significance of providing guidelines for people with terminal illnesses to select their place of death. The findings of this study serve as a foundation for more research in this area. Further research is recommended to determine the causes of death place neglect and to look at the elements that make handling the place of death issue easier.

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### *Ethical Consideration*

Our target population was deceased patients; thus, we had to include their families in order to complete the questionnaires. Therefore, due to the sensitivity of the subject,





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families whose patients passed away at least 6 months prior to the study were asked to complete the questionnaire. Also, informed consent was obtained from all participants.

### *Authors' Contribution*

R.T. and H.H.: study design and data analysis; F.O. supervision and study design; all authors: writing and manuscript revision.

### *Conflict of Interests*

The authors declare that they have no competing interests.

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