



Quality of Life among Cancer Patients in Iran

ARTICLE INFO

Article Type

Systematic Review

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How to cite this article

Isfahani P, Corani Bahador R, Peirovy S, Afshari M. Quality of Life among Cancer Patients in Iran. Health Education and Health Promotion. 2022;10(1):23-31.

ABSTRACT

Aims Being diagnosed with cancer is a stressful event that may have negative effects on the quality of life of the patient. The purpose of this study was to determine the quality of life of cancer patients in Iran.

Information & Methods This systematic review is a meta-analysis study that was conducted in 2020. Five electronic databases and Google Scholar were used to search for original research papers published up to December 20, 2020, on the quality of life of cancer patients in Iran. Overall, 30 articles were selected and analyzed using the Comprehensive Meta-Analysis 2.2.064. Heterogeneity of the studies was assessed using Cochran's Q-test statistics and I2 test, and publication bias was assessed using Egger's test. Meta-regression was performed to assess the variables suspected to affect the heterogeneity. The outcomes of the studies were combined using the random-effects model.

Findings Average quality of life among cancer patients was 50.83 ± 3.07 (44.80-56.86; 95% CI). The highest quality of life was observed in the city of Qazvin in 2012 at 103.07 ± 1.61 (100.11-106.03; 95% CI) and the lowest quality of life was observed in the city of Tehran in 2010 at 4.05 ± 0.36 (3.35-4.75; 95% CI). A statistically significant correlation was observed between the quality of life, publication year, average age, and sample size ($p < 0.05$).

Conclusion The results of this study indicated that the average quality of life of cancer patients in Iran was moderate.

Keywords Cancer; Quality of Life; Meta-Analysis; Iran

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Article History

Received: May 22, 2021
Accepted: August 29, 2021
ePublished: January 24, 2022

CITATION LINKS

[1] Quality of life of cancer ... [2] Effect of two educational models based ... [3] Cancer peer support programs- do they ... [4] Longitudinal study and quality of life and ... [5] Social support and adjustment to ... [6] Psychosocial issues, outcomes ... [7] Outcomes research in oncology ... [8] Quality form a transcultural ... [9] Park's Textbook of preventive ... [10] Quality of life and related factors ... [11] The frequency distribution of depression ... [12] Related factors with quality ... [13] The relationship between anemia-related fatigue ... [14] Preferred reporting items for systematic ... [15] Knowledge transfer and exchange ... [16] Orientation of life, quality of life ... [17] The effect of Reflexology on quality ... [18] Relationship between mother's general ... [19] The effect of chemotherapy on functional ... [20] The impact of cognitive interventions in ... [21] Effects of training on the care ... [22] The relationship between quality ... [23] Reliability and validity of the QLQ-C30 ... [24] The relationship between anemia and ... [25] The effect of mastectomy on mood ... [26] Investigate the relationship between ... [27] Effectiveness of cognitive behavior ... [28] Quality of patients with cancer ... [29] Assessment of quality of life in ... [30] Predictive Factors of quality of life ... [31] Quality of life in gynecologic cancer ... [32] Comparison of the role of religious ... [33] Comparison of quality of life 3 and 9 months ... [34] Assessment of quality of life ... [35] Death anxiety and its relationship ... [36] The role of cognitive emotion-regulation ... [37] Correlation of perceived social ... [38] The relationship between psychological ... [39] Role of religious beliefs in ... [40] Relationship between quality of life ... [41] Investigation of the relationship ... [42] Quality and its related factors ... [43] Self-confidence and Quality of life in women undergoing treatment ... [44] Quality of life in patients with ... [45] Quality of life among cancer ... [46] A study to assess the quality of life ... [47] A review on quality of life ... [48] The quality of life in cancer patients ... [49] Factors associated with health-related ... [50] Breast cancer in older women: QUALITY and psychosocial ... [51] Race/ethnicity, physical activity ... [52] Quality of life among women with breast cancer from university...

Introduction

One of the important public health problems in developing and developed countries is cancer [1]. Cancer consists of more than a hundred different diseases that affect all ethnic, racial, age, sex, economic, and social groups. According to the World Health Organization (WHO), the number of new cases of cancer increased from 10 million in 2000 to 15 million in 2020, with developing countries accounting for approximately 60 percent of the new cases. WHO also estimates that cancer-related deaths will increase from 9 million in 2015 to 11.4 million in 2030, with 7 percent of deaths occurring in low-and middle-income countries (LMICs). The annual incidence of cancer in Iran is about 70,000 cases and the annual number of cancer deaths is about 30,000. Given the increase in life expectancy and the growing elderly population in Iran, the incidence of cancer is expected to increase significantly in the coming decades [2].

Diagnosis with cancer was associated with pain, loss of function, and impending death, but today, with new treatments, it is considered a chronic disease in more than half of cases [3]. It affects all aspects of quality of life, including physical, psychological, functional, social, and economic well-being [4]. Cancer disrupts the patients' social life, daily routines, and functions [5], making them more dependent on others and less capable of supporting others. These problems, coupled with prolonged hospitalization, frequent visits, various treatments, and high treatment costs, reduce the quality of life (QoL) of cancer patients [6]. Today, QoL has become an integral part of the evaluation criteria for cancer treatment [7].

QoL is evaluated in order to choose the optimum treatment and care for patients based on their health status and their physical, mental, and social well-being [8]. There are different definitions of QoL. For example, WHO defines QoL as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns." [9]. Cancer affects patients' QoL to varying degrees. Problems that typically affect the QoL of cancer patients include diagnostic and therapeutic procedures, stress, pain, depression, the impact of cancer on social/family relationships, nutritional issues, and treatment-related complications [10, 11].

There have been several studies on the QoL of cancer patients in various regions of Iran. For example, the QoL of preschool children with cancer visiting a hospital in Shiraz city in 2012 was about 15.81 ± 63.35 [12]. Moreover, in a 2009 study in Ramsar city, the QoL of cancer patients was reported to be about 31.2 ± 8.6 [13].

However, these studies cannot provide a comprehensive view of this problem for the entire

country. Integrating the results of validated studies in this area can provide better recommendations for policymakers and enable them to make evidence-based policies. Therefore, the purpose of this research was to conduct a meta-analysis of the QoL of cancer patients in Iran.

Information & Methods

This systematic review is a meta-analysis study and conducted in 2020. It followed the guidelines for preferred reporting items for systematic review and meta-analysis (PRISMA) [14]. To identify relevant articles until December 20, 2020, researchers searched for articles published electronically in Persian databases including Scientific Information Database (SID) and Magiran as well as English databases including PubMed, Web of Science, Scopus, and Google Scholar. Persian and English keywords and a combination of these terms were used in searches. These keywords included Quality of Life, Cancer, Tumor, and Iran/Iranian along with AND/OR operators. Besides, the reference lists of published articles were examined to increase sensitivity and to find more relevant studies (Table 1). The search was initially conducted in December 2020 and then updated in August 2021, not resulting from any additional studies that faced the inclusion criteria. The articles that did not meet the following criteria were excluded: 1) studies that did not report the QoL of cancer patients; 2) letter to the editor, case-control, randomized controlled trials and qualitative studies 3) grey literature, books, and dissertations; 4) articles, documents, and reports published after December 20, 2020; 5) articles that examine the relationship between QoL and certain factors without determining the QoL of cancer patients; 6) studies that did not obtain the minimum score of 10; 7) studies published in any language other than Persian or English. On the other hand, all Persian and English cross-sectional articles that obtained the critical score and that determined QoL among cancer patients in Iran were included.

The quality of the 30 included articles was assessed independently by two authors (first and last authors) using the 15-point instrument of Mitton *et al.* [15]. In this checklist, each item is given a score of 0 (not present or reported), 1 (present but low quality), 2 (present and midrange quality), or 3 (present and high quality). Disagreements were resolved through discussion or by consulting a third reviewer (first author) if necessary. Finally, only midrange and high-quality studies were included in this review and meta-analysis based on the instructions of the KTE empirical article quality rating sheet:

- 0 – not present or reported anywhere in the article
- 1 – present but low quality
- 2 – present and midrange quality
- 3 – present and high quality

_____ 1. Literature Review: Directly related recent literature is reviewed and research gap (s) identified.

_____ 2. Research Questions and Design: A priori research questions are stated, and hypotheses, a research purpose statement, and/or a general line of inquiry is outlined. A study design or research approach is articulated.

_____ 3. Population and Sampling: The setting, target population, participants, and approach to sampling are outlined in detail.

_____ 4. Data Collection and Capture: Key concepts/measures/variables are defined. A systematic approach to data collection is reported. Response or participation rate and/or completeness of information capture is reported.

_____ 5. Analysis and Results Reporting: An approach to analysis and a plan to carry out that analysis is specified. Results are clear and comprehensive. Conclusions follow logically from the findings.

_____ /15=Total Score

The initial search was done by the first and last authors. Then, an additional search was conducted by the third author. The data were extracted and evaluated by all authors. Finally, the final analysis was done by the first author. The duplicate articles

were removed using Endnote x9 software. Extracted data included the title of the article, the first author, year of publication, average age, sample size, instrument, statistical population, methodology, location of study, and QoL, and an Excel 2016 spreadsheet was used for data entry. The initial search resulted in 5,686 articles. After excluding duplicates and irrelevant articles, 3,138 studies were selected for abstract examination. After reviewing the abstracts, 3,085 articles were removed. Also, 23 articles were removed after examining the full texts as they did not report the mean±SD values for the QoL of cancer patients. Finally, 30 studies [13, 16-44] were found eligible for inclusion in the meta-analysis (Diagram 1).

Data were analyzed using the Comprehensive Meta-Analysis (CMA) software version 2.2.064 (the US, Biostat Inc.). The heterogeneity of the studies was assessed using Cochran's Q-test statistics and I² test. Strong evidence of heterogeneity was observed (I²=99.94, p<0.05), and, thus, a random-effects model was used to synthesize their results. The funnel plot and Egger's test were used to assess the likelihood of publication bias, and the results showed that publication bias was not statistically significant (p=0.055). Finally, the effect of variables that could be the potential sources of heterogeneity was examined using the meta-regression technique. Point estimates of QoL in cancer patients were calculated in forest plots at the 95% confidence interval, where the size of the box indicates the weight of each study and the lines on its sides represent the 95% CI.

Table 1) Search stages

Databases	Search Strategy	Preliminary Searches
PubMed	("quality of life" [MeSH Terms] OR ("quality" [All Fields] AND "life" [All Fields]) OR "quality of life" [All Fields]) AND (("cancer s" [All Fields] OR "cancerated" [All Fields] OR "canceration" [All Fields] OR "cancerization" [All Fields] OR "cancerized" [All Fields] OR "cancerous" [All Fields] OR "neoplasms" [MeSH Terms] OR "neoplasms" [All Fields] OR "cancer" [All Fields] OR "cancers" [All Fields]) AND "Or" [All Fields] AND ("cysts" [MeSH Terms] OR "cysts" [All Fields] OR "cyst" [All Fields] OR "neurofibroma" [MeSH Terms] OR "neurofibroma" [All Fields] OR "neurofibromas" [All Fields] OR "tumor s" [All Fields] OR "tumoral" [All Fields] OR "tumorous" [All Fields] OR "tumour" [All Fields] OR "neoplasms" [MeSH Terms] OR "neoplasms" [All Fields] OR "tumor" [All Fields] OR "tumour s" [All Fields] OR "tumoural" [All Fields] OR "tumorous" [All Fields] OR "tumours" [All Fields] OR "tumors" [All Fields])) AND ("Iran" [MeSH Terms] OR "Iran" [All Fields]) Filters: Free full text, Full text, from 1000/1/1-2020/12/20	71
Scopus	TITLE-ABS-KEY ("quality of life") AND TITLE-ABS KEY (cancer OR tumor) AND TITLE-ABS-KEY (iran) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (AFFILCOUNTRY, "Iran"))	276
Web of Science	(QoL AND (cancer Or tumor) AND Iran) Refined by: DOCUMENT TYPES: (ARTICLE) Timespan: All years. Indexes: SCI-EXPANDED, SSCI, A&HCI, ESCI.	296
Google Scholar	QoL AND (cancer Or tumor) AND Iran	5000
SID	QoL AND cancer AND Iran	12
Magiran	QoL AND (cancer Or tumor) AND Iran	29

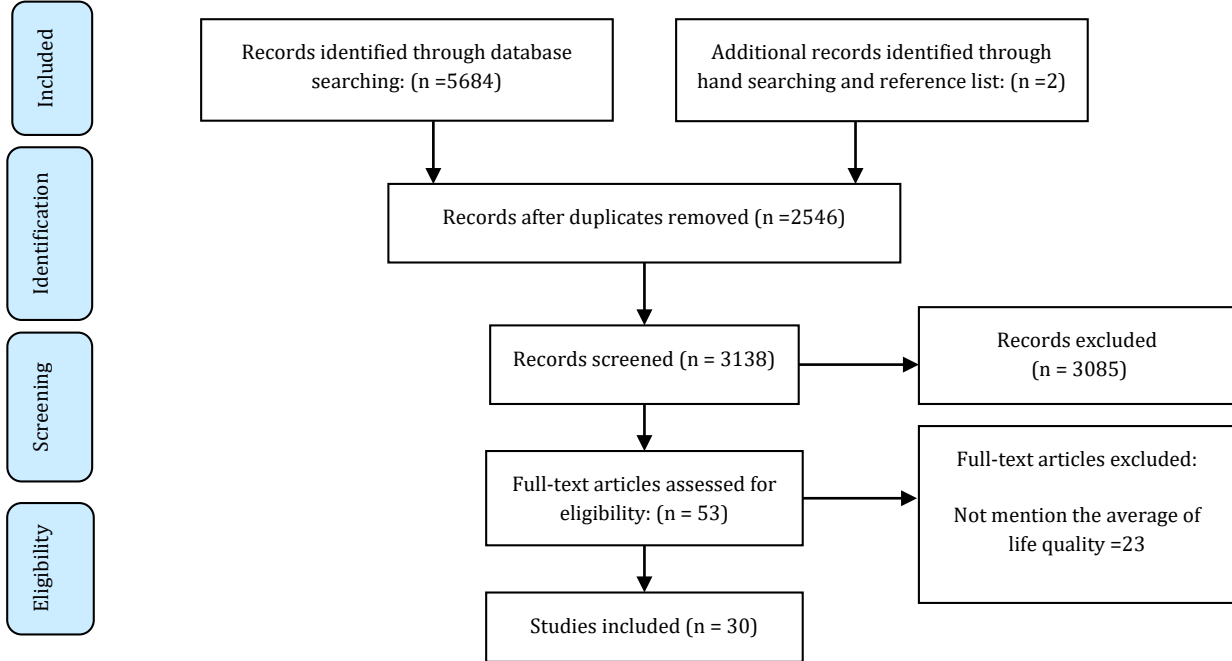


Diagram 1) PRISMA flow chart for study selection

Findings

Most of these studies were conducted in 2010 and 2011. More than half of these studies were published after 2009 (Diagram 2). Most studies were done in Tehran, Gilan, and Qazvin provinces (Diagram 3).

Based on the random-effects model, the average QoL of cancer patients was 50.83 ± 3.07 (44.80-56.86; 95% CI). The highest QoL was observed in the city of Qazvin in 2012 at 103.07 ± 1.61 (100.11-106.03: 95% CI) and the lowest QoL was observed in the city of Tehran in 2010 at 4.05 ± 0.36 (3.35-4.75: 95% CI) (Table 2).

The results were summarized by sample size, studies quality, studied population, cancer type, questionnaire type, and geographic region (Table 3). The mean QoL of cancer patients was higher in the eastern region of Iran. Patients with genital cancer had a better QoL than those with other types of cancer. The mean QoL was higher in men and

women than children. Moreover, studies with sample sizes greater than 100 reported higher mean values. Finally, studies with midrange quality reported higher mean values than those with higher quality. Higher QoL scores were reported using the McGill questionnaire than other instruments.

The results of evaluating heterogeneity indicated a high level of heterogeneity among the included studies ($Q=48605.498$; $p=0.0001$). Thus, a meta-regression model was used to identify the variables that could potentially cause heterogeneity. The results showed in Table 4 and Diagram 4 indicate that sample size, publication year, and average age contributed to the heterogeneity of studies on the QoL in Iranian cancer patients. The results revealed that the QoL of Iranian cancer patients has decreased by 2.48% each year. One year increase in patients' age decreased QoL by 0.16. Moreover, the results showed that one unit increase in sample size has increased QoL by 0.17 in Iranian cancer patients.

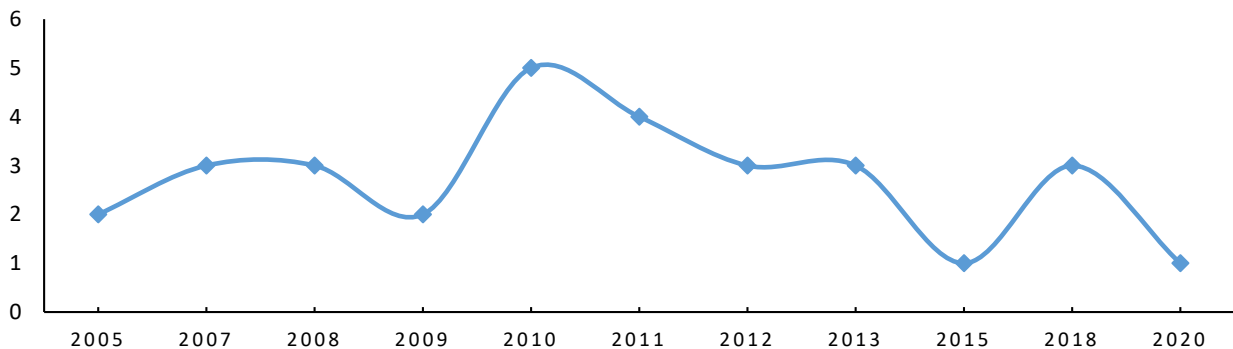


Diagram 2) Frequency distribution of publication year

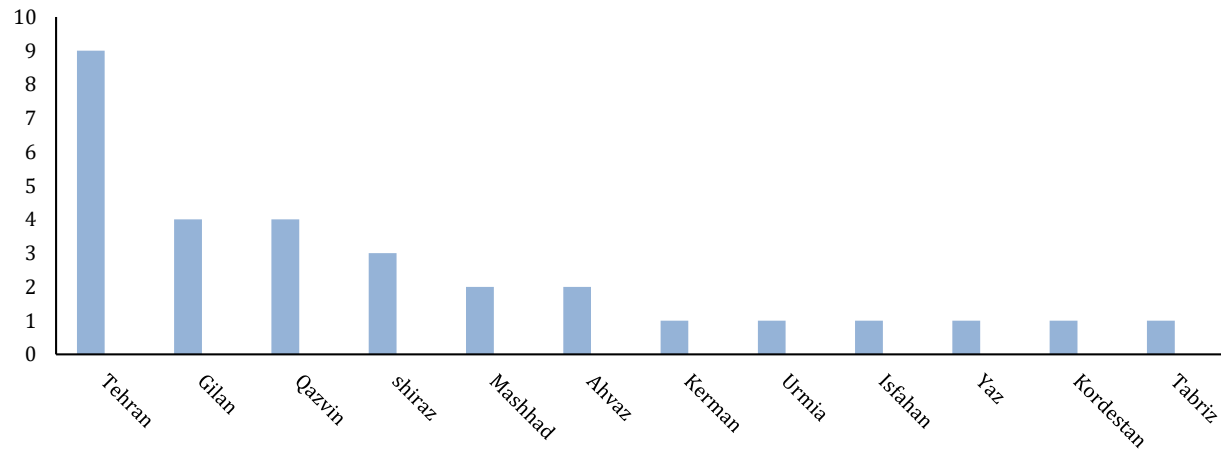


Diagram 3) Frequency distribution of studied QoL among cancer patients

Table 2) Results of forest plot for 31 studies

Row	Mean	Standard error	Variance	Lower limit	Upper limit	Z-value
1	53.630	2.035	4.142	49.641	57.619	26.351
2	48.230	1.683	2.834	60.065	66.635	37.802
3	63.350	1.676	2.808	60.065	66.635	37.802
4	5.003	0.020	0.000	4.965	5.041	256.496
5	4.050	0.356	0.127	3.352	4.748	11.374
6	71.700	2.275	5.175	67.241	76.159	31.519
7	24.500	0.264	0.070	23.983	25.017	92.803
8	64.920	2.226	4.954	60.558	69.282	29.168
9	62.030	0.933	0.870	60.202	63.858	66.504
10	16.740	0.305	0.093	16.141	17.339	54.801
11	20.780	0.195	0.038	20.398	21.162	106.560
12	41.370	1.340	1.796	38.743	43.997	30.871
13	74.280	2/536	6.432	69.309	79.251	29.289
14	9.100	0.409	0.168	8.298	9.902	22.232
15	70.920	1.484	2.201	68.012	73.828	47.803
16	71.680	2.229	4.969	67.311	76.049	32.157
17	64.930	1.181	1.395	62.615	67.245	54.967
18	51.650	3.233	10.453	45.313	57.987	15.975
19	46.210	2.272	5.163	41.757	50.663	20.338
20	102.570	1.431	2.047	99.766	105.374	71.693
21	103.070	1.511	2.284	100.108	106.032	68.193
22	18.220	0.281	0.079	17.669	18.771	64.807
23	63.740	1.949	3.800	59.919	67.561	32.696
24	51.800	2.059	4.238	47.765	55.835	25.164
25	79.280	1.568	2.458	76.207	82.353	50.572
26	47.320	2.191	4.802	43.025	51.615	21.594
27	31.200	0.938	0.880	29.361	33.039	33.250
28	46.900	0.943	0.889	45.052	48.748	49.753
29	59.100	1.351	1.824	56.453	61.747	43.762
30	59.800	1.572	2.470	56.720	62.880	38.049
31	50.838	3.077	9.465	44.808	56.868	16.524

Note: p-value= 0.000 for all studies result.

Table 3) Subgroup analyses of the included studies

Variable	Number	QoL 95% CI	Heterogeneity	
			I ²	p
Region				
Central Iran	13	50.2±5.3	99.88	≤0/001
Southern Iran	5	51.04±11.9	99.84	≤0/001
Western Iran	2	55.9±3.6	77.88	≤0/001
Eastern Iran	4	61.4±24.4	99.93	≤0/001
Cancer Type				
Breast	10	44.10±4.85	99.92	≤0/001
head	1	9.10±0.40	-	-
leukemia	1	53.63±2.03	-	-
All	11	56.62±6.23	99.93	≤0/001
Genital	1	71.68±2.22	-	-
Gastrointestinal	2	49.74±1.95	46.86	0.15
Cervical cancer	1	46.9±0.94	-	-
Gastric	1	9±1.48	-	-
Gynecological cancer	1	59.8±1.57	-	-

Continue of Table 3) Subgroup analyses of the included studies

Variable	Number	QoL 95% CI	Heterogeneity	
			I ²	p
Questionnaire Type				
WHOQOL-BRFF	5	63.6±16.98	99.90	≤0/001
EORTC-QLQ-C30	5	57.9±4.40	96.23	≤0/001
FACT-G	2	51.3±20.4	99.64	≤0/001
FPQOLI	2	17.4±0.74	92.13	≤0/001
QLQ-C30	5	60.4±6.43	98.80	≤0/001
McGill	1	103.07±1.51	-	-
Ped Qol Cancer Module	1	63.35±1.67	-	-
UW-QOL4	1	9.10±0.40	-	-
Standard and specific quality of life	1	5±0.02	-	-
Visual Analog Scale (VAS)	1	4.05±0.35	-	-
SF-36	4	48.14±14.58	99.80	≤0/001
Sarason's Social Support Questionnaire	1	62.03±0.93	-	-
European QoL Questionnaire	1	51.80±28.30	-	-
Sample Size				
<100	20	46.56±3.37	99.92	≤0/001
≥100	10	59.32±6.69	99.89	≤0/001
Studied Population				
Men & Women	15	52.01±4.63	99.86	≤0/001
Women	13	52.18±5.35	99.94	≤0/001
Children	2	33.67±29.65	99.87	≤0/001
Quality				
High	18	50.70±4.92	99.84	≤0/001
Midrange	12	51.07±4.67	99.96	≤0/001

Table 4) Results of meta-regression

Variable	Number of studies	Point estimate	Standard error	p-value
Year	30	-2.48	0.02	0.0001
Sample size	30	0.17	0.001	0.0001
Average of age	28	-0.16	0.005	0.0001

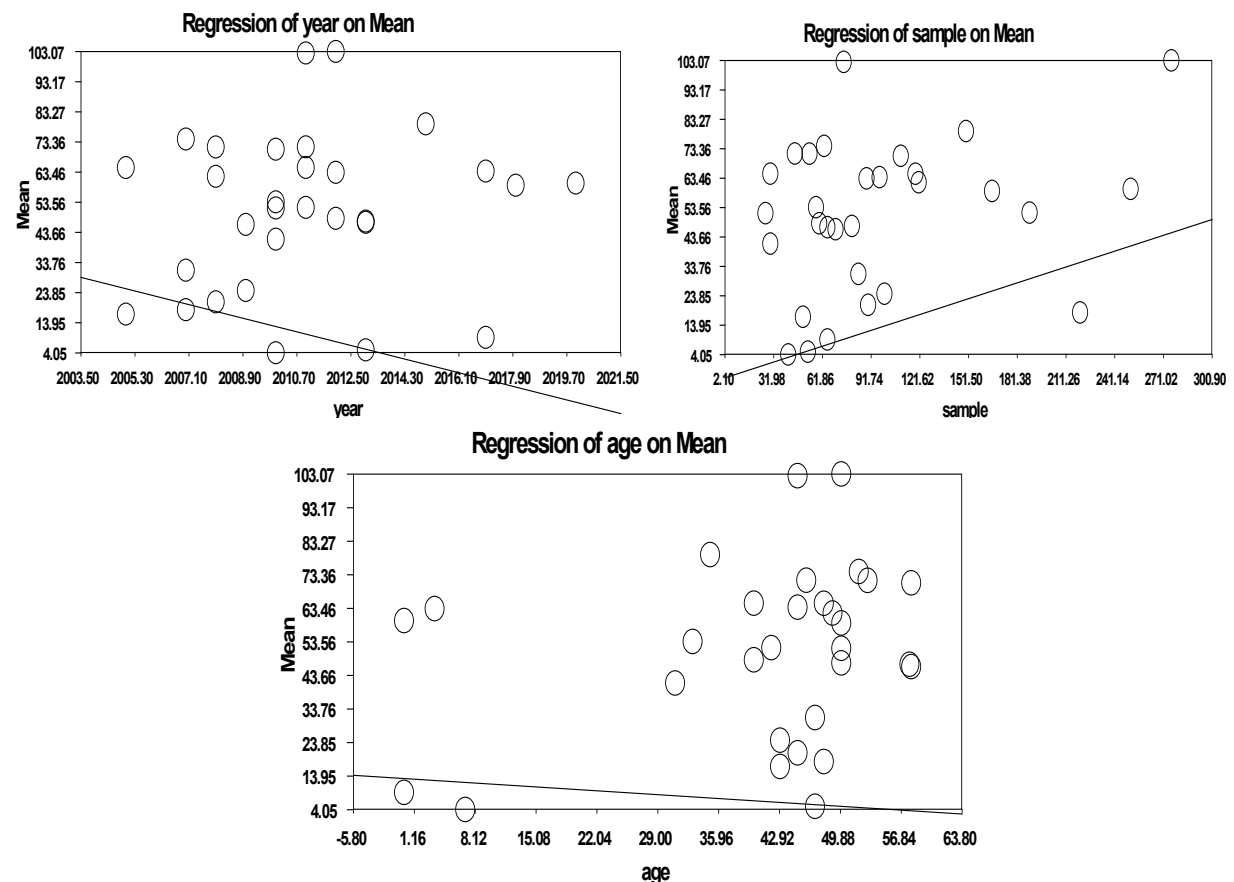


Diagram 4) Results of meta-regression

Discussion

The purpose of this study was to determine the QoL of cancer patients in Iran. By examining eight databases, 30 relevant articles were identified. The overall average QoL of Iranian cancer patients was 50.83 ± 3.07 . Several studies have examined the QoL of cancer patients worldwide. For example, the average QoL of cancer patients was reported to be 105 ± 12.93 in cancer hospitals of Karnataka in 2017 [45] and 6.88 ± 1.41 in Chennai women with cervical cancer [46]. The QoL of cancer patients varies. The difference in studies is because of the difference in culture, context, population, the conditions of this disease, and treatment process. Cancer can result in different types of changes in the life of cancer patients [47].

The present research showed that one unit increase in sample size increased the average QoL of cancer patients by 0.17. In other words, studies that use a small sample unintentionally create sampling bias and, as a result, cannot provide valuable information for health policymakers and managers. Therefore, studies on the QoL of cancer patients must use a representative sample and employ appropriate sampling techniques.

In the present study, the mean QoL score of cancer patients varied in different regions of Iran. That is, the mean QoL score of cancer patients was 43.4 in six studies in the northern region, 51.6 in one study in the western region, 49.6 in 11 studies in the central region was, 51.04 in five studies in the southern region, and 61.4 in four studies in the eastern region. Therefore, the average QoL of cancer patients was higher in eastern Iran compared to other regions of the country. However, the QoL of cancer patients has been investigated only in a limited number of Iran's provinces. Therefore, these studies have not been extensive and this gap can be filled in future research.

In recent years, several studies have been conducted on the QoL of cancer patients. However, the results of these studies showed large dispersion and heterogeneity. Another key factor is the instrument used to measure QoL among cancer patients. Given that there are a variety of instruments, the QoL of cancer patients has been measured differently. Therefore, differences between the results of the reviewed studies can be, in part, due to differences in the instrument used to measure this variable. In this article, the average QoL of cancer patients was higher when using the McGill questionnaire than other instruments. Overall, there is no comprehensive questionnaire for measuring the QoL of cancer patients, and future research can focus on developing one for Iranian patients.

A closer look at the average QoL of cancer patients in these studies showed that it has decreased in recent years. Recent escalation of sanctions against Iran and the lack of supportive organizations have

imposed greater financial burden on Iranian people and, as a result, patients face more psychological and physical stress in providing for the cost of their treatment. Therefore, insurance organizations must increase their support for these patients. Moreover, considering the prevailing religious culture of the Iranian people, it seems that by developing a comprehensive care plan that includes spiritual well-being, interventions for treating depression and anxiety in these patients may prove to be more effective.

The results showed that average QoL was higher in men and women compared to children. However, this finding is not consistent with the results of Sarukhani's study. Saroukhani *et al.* showed that average QoL of cancer patients was higher in women than men [48]. Besides, in this study, QoL was higher in patients with gynecological cancer than those with other types of cancer. Given that only one study was conducted on gynecological cancer, this finding must be interpreted with caution.

This study showed that with one year increase in the patients' age, the average QoL decreased by 0.16, which is consistent with the results of other studies [49, 50]. However, the results of studies [51, 52] showed that QoL improves with age. This may be due to cultural differences and differences in sample size. Researchers believe that illness and loneliness in older men and women exacerbate their physical problems and affect their social relationships. As a result, these problems have an adverse effect on the QoL of older men and women.

One of the limitations of this study was the use of different instruments to assess QoL among cancer patients. It prevented us from collecting sufficient information about certain variables. Also, some studies related to the QoL of cancer patients are not published in scientific journals, which may produce biased results.

Conclusion

The results of this study indicated that the average quality of life of cancer patients in Iran was moderate. Therefore, it is necessary for health managers and policymakers in Iran to take more serious measures to improve the quality of life of these patients.

Acknowledgments: -

Ethical Permissions: -

Conflicts of Interests: -

Authors' Contributions: Isfahani P. (First Author), Introduction Writer/Main Researcher/Discussion Writer (50%); Corani Bahador R. (Second Author), Methodologist/Assistant Researcher (20%); Peirovy S. (Third Author), Statistical Analyst (20%); Afshari M. (Fourth Author), Assistant Researcher (10%)

Funding/Support: -

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