Journal of Rare Cardiovascular Diseases
ISSN: 2299-3711 (Print) | e-ISSN: 2300-5505 (Online)
www.jrcd.eu
RESEARCH ARTICLE

Nurses' Self-Assessed Competencies in Caring for Cancer Patients in Kirkuk City: A Cross-Sectional Study

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Article History
Received: 15.09.2025
Revised: 07.10.2025
Accepted: 23.10.2025
Published: 05.11.2025

Abstract: Cancer remains one of the most pressing global health challenges in the twenty-first century, ranking as a leading cause of death and a significant barrier to life expectancy growth, worldwide. Oncology nurses serve in confronting this increasing global burden, playing a crucial role in patient care through a wide range of responsibilities and specialized competencies in cancer care. Objectives: This study aimed to assess oncology nurses' competencies in cancer care within Kirkuk governorate. Methods: A descriptive (cross-sectional) design was employed, using the Nurse Competence Scale, with a purposive sample of 91 nurses from Kirkuk Oncology and Hematology Center in Kirkuk City, Iraq. Data collection took place between February 14th, 2025, and March 26th, 2025. The instrument comprises two sections: nurses' socio-demographic characteristics and a modified Nurse Competence Scale questionnaire. SPSS version 22.0 was used for statistical analysis. Results: The overall level of nurses' competencies as perceived by nurses was Moderate (PGMS= 58.7%; n = 91). At the same time, the frequency of using competencies matched the level of competencies in most items (P>0.05). However, deviation was reported in 15 items out of the overall of 57 items, in which the competency level of nurses significantly preceded the applicability or vice versa (P<0.05, and P<0.01). No significant relationship was found between the redistribution of competencies and respondents' socio-demographic factors, such as age, gender, educational background, and years of experience (p>0.05). Conclusion and Recommendations: Oncology nurses in Kirkuk demonstrate moderate levels of self-assessed competency in cancer care. Further continuous targeted training programs are recommended in cancer care.

Keywords: Nurses' Competencies, Cancer Care, Self-Assessed Competencies, Kirkuk City Nurses' Competencies, Cancer Care, Self-Assessed Competencies, Kirkuk City Nurses' Competencies, Cancer Care, Self-Assessed Competencies, Kirkuk City.

INTRODUCTION

Cancer is a major societal, economic, and public health problem in the twenty-first century (Mattiuzzi & Lippi, 2019). It ranks as a leading cause of death and an important barrier to increasing life expectancy in every country of the world (Bray et al., 2021), with over 19 million new cases and 10 million deaths estimated in 2020 alone(World Health Organization, 2020). It recognized as one of the most top causes of death in 2019, as it ranked the first/ second chief cause of mortality prior to reaching 70 years of age in 112, and the third/ fourth in another 23 countries(Islam & Venkataraman, 2021; World Health Organization, 2020). Generally, about one in every five individuals(men and women) will be diagnosed with cancer during lifetime, while approximately one in every nine men and one in every twelve women will eventually die from cancer, worldwide (Bray et al., 2024). Kirkuk City also has experienced a significant increase in cancer cases over the past few years (Mohammed, et al., 2023). The global load of cancer cases is expected to reach about 28.4 million cases by 2040, a 47% growth from 2020, with a larger rise in transitioning (64% to 95%) against transitioned (32% to 56%) nations, driven by socio-demographical variations (Sung et al., 2021).

Oncology nurses are deemed a core component in confronting the escalating worldwide increased impact of cancer, through playing a fundamental role in providing care for cancer patients, and their involvement is irreplaceable because of the wide range and diversity of duties they provide in cancer care (Young, 2020). They are responsible for providing holistic cancer care that extends beyond clinical care to include the physical, psychological, social, and spiritual aspects for patients throughout the cancer journey (Aljohani et al., 2024). This range of responsibilities shown in their engagement in the promotion of health, care coordination, symptom management, emotional support, and in providing palliative care, where nurses focus on care that enhance the quality of life of patients and families (Kelly et al., 2021; Silva & Bezerra, 2020). As frontline healthcare professionals, they play a dynamic role in detecting risk factors, educating patients, and facilitating appropriate interventions; this supportive care provided by nurses not only enhances clinical outcomes but further assists in empowering patients, fostering autonomy and improving quality of life and patient outcome, eventually (Young et al., (2020). With the growing of cancer burden and the complexity of cancer care increases, there is a growing need for oncology nurses to possess progressive competencies to meet these needs

(Khademi, E. et al., 2021). This highlights the need for further assessment to address competency gaps, in order to establish the base for future enhancements of the quality of oncology nursing care. Therefore, given the critical role that nurses play in this regard, this study was conducted to assess the degree of nurses' effectiveness in providing care for cancer patients, pinpointing areas of competence that require further attention and development.

MATERIAL AND METHODS

Design and Setting

A descriptive (cross-sectional) study was conducted among nurses at the Oncology and Hematology Centre in Kirkuk City. This design allows data collection from nurses at a specific point in time.

Sample

A non-probability, purposive sample of 91 nurses was selected from the Oncology and Hematology Center in Kirkuk City.

Inclusion Criteria

All nurses (male and female) working at Kirkuk Oncology and Hematology Center who hold at least a diploma in nursing, including both shifts (morning and night).

Exclusion Criteria

Nurses who declined to participate and those who were on leave during the data collection period. Additionally, those working in managerial positions that do not involve direct patient care or nursing supervision.

Methods of Data Collection

A modified Nurse Competence Scale was adopted. The data collection tool consisted of two parts: the first included the socio-demographic data of the sample, while the second involved seven domains assessing nursing competencies in cancer care and the extent to which these skills are applied in the clinical setting.

Part (1): Socio-Demographic Variables

This part is composed of nurses' socio-demographic characteristics, including: age, sex, educational background, years of experience as a nurse, years of experience in cancer care, current ward working in, the position in the ward, the working shift, the duration in the position, training courses.

Part (2): Nurses' Competencies in Cancer Care

A modified version of the Nurse Competence Scale was used to assess oncology nurses' competencies. It consists of (57) closed-ended questions divided into (7) groups of questions.

The questions measure multiple areas of nursing competencies. The seven categories are: Assistance (10 questions); Consulting, counselling and education (7 questions); Diagnosis and observation(8 questions); Effective action in emergencies (4 questions); Supervision and provision of quality in the medical care (7 questions); Organisation and cooperation(14 questions); Training, education (7 questions).

The tool composed of two principal asking, for the first asking: "How do you evaluate the degree/level of your Competence?", a measurement score of the tenth Visual Analogue Scale (VAS) index of three unbiased categories intervals was used: "(0 - 3) classified for very low response, (3-6) classified for medium response, and (6-10) which classified for very high", and for the second asking: "How often is it applied in your job ?", a measurement scale of "Seldom, Sometimes, Often, and Not applied" was used, with scores of "1, 2, 3, and 0", respectively.

The Content Validity of the Tool and Reliability

A panel of eleven experts from different fields involved in content validity, eight members from Nursing College/ University of Kirkuk, and three consultant members from Kirkuk Oncology and Hematology Center/ Ministry of Health. Based on their review, the tool was determined as valid, and minor changes were made to items according to the experts' suggestions. Regarding reliability, the Alpha Cronbach was used on a sample of 10 nurses. Results showed that the reliability Coefficient for studying observed responding was verified (0.92%). Additionally, the intra-examiner and inter-examiner (test-retest) tests recorded adequate reliability coefficients of 99.09% and 98.64%, respectively.

Data Analysis

Statistical Package for Social Science (SPSS) version 22.0 was used for data analysis. Descriptive statistics (Mean, Standard Deviation, Frequency, Percentage, Relative Sufficiency (RS%). The Wilcoxon Signed Rank Test, Chi-Square ($\chi 2$), Contingency Coefficients (C.C.) test, and Binomial test were employed for inferential data analysis.

Ethical Consideration

Official ethical approvals were obtained from the relevant authorities, including the College of Nursing Committee at the University of Kirkuk, the Directorate of Health in Kirkuk, and the Kirkuk Center for Oncology and Hematology. Additionally, oral informed consent was obtained from participants.

RESULTS AND OBSERVATIONS:

Table (1A): Distribution of Studied Sample According to Socio-Demographical Characteristics (N=91)

Socio-Demographic Characteristics variables	Groups	No.	%	C.S. (*) P-value
Age Groups Yrs.	20 _	40	44.0	χ2= 61.110 P=0.000 (HS) Mean ± SD 28.31 ± 7.24
	25 _	21	23.1	
	30 _	13	14.3	
	35 _	6	6.6	
	40 _	6	6.6	
	45 _ 50	5	5.5	
Sex	Male	45	49.5	P=1.000 (NS)
	Female	46	50.5	
Educational Level	Diploma degree	79	86.8	P=0.000 (HS)
	Bachelor's degree	12	13.2	
Years of experience as a nurse	1 _ 5	66	72.5	χ2= 158.505 P=0.000 (HS)
	6 _ 10	9	9.9	
	11 _ 15	8	8.8	
	16 _ 20	6	6.6	
	≥ 21	2	2.2	
Years of experience in cancer care	1 _ 5	77	84.6	χ2= 110.066 P=0.000 (HS)
	6 _ 10	13	14.3	
	11 _ 15	1	1.1	
Current ward working in	Males' lounge	38	41.8	χ2= 20.593 P=0.000 (HS)
	Females' lounge	42	46.2	
	Both lounges	11	12.1	
The position in the ward	Nurse (caregiver)	80	87.9	χ2= 193.967 P=0.000 (HS)
	Nurse (preparation therapy)	1	1.1	
	Administrative Employee	9	9.9	
	Director of the continuous education department	1	1.10	
Shift	Morning	46	50.5	P=1.000

	Night	45	49.5	(NS)
How long have you been in the position?	1 ≤	53	58.2	$\chi 2$= 27.055
	2 _ 4	24	26.4	P=0.000
	≥ 5	14	15.4	(HS)

(*) HS: Highly Sig. at P<0.01; NS: Non Sig. at P>0.05. Testing based on the One-Sample Chi-Square test and Binomial test.

Table (1A) shows that most of the studied nurses' Socio-Demographic Characteristics have restricted distributions, with highly significant differences (P<0.01) between the observed and expected frequency distributions, except for sex and shift, for which no significant differences are observed (P>0.05).

More than two-thirds of nurses are under thirty years old (67.1 %) with a mean age of (28.31± 7.24) years. The sample is distributed equally between the male and female sexes (49.5% and 50.5%, respectively), with most holding a Diploma degree (86.8%). About three-quarters have less than 6 years of nursing experience (72.5%). Most participants had less than 6 years of experience in cancer care(84.6%). A large proportion of participants were distributed between the females' lounge (46.2%) and the males' lounge (41.8%), with only 12.1% responsible for both lounges. Most participants (87.9%) were caregiver nurses. Regarding the working shift, the sample was similarly distributed between morning and evening shifts (50.5% and 49.5%, respectively). More than fifty of the studied nurses staff were working at the position for one year or less(58.2%), meanwhile, only(15.4%) of them held their current position for five years or more.

Table (2A) shows that no significant differences are observed at P>0.05 between the observed and expected frequency distributions for the items "received training courses?" and "number of received training courses". In contrast, almost all the training courses attendance were highly significant (P<0.01), except the chemotherapy administration training at P>0.05. Out of the total sample, only 53(58.2%) had attended training courses. In contrast, the remaining 38(41.8%) of them are not attending any. Among those who attended training courses, most (45.3%) were registered for two courses, while 34.0% had only one course, and only 20.8% had attended three courses. The highest registered content was the chemotherapy administration training course(47.2%), while the other mentioned contents ranged between 1.9%, and 28.3%.

(*)HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05. Evaluation Intervals: (00.33 – 55.55) Low (L); (55.56 – 77.77) Moderate (M); (77.78– 100) High (H). Scoring Scales: 0 _ 3 (Very Low); 4 _ 6 (Medium); 7 _ 10 (Very High). Testing is based on the Wilcoxon Signed Ranks test.

Table (1B) results concerning the assistance domain show a moderate level of competence in most subdomains (RS: 73%- 77 %). In contrast, only two subdomains (3, and 7) show a high competence level (RS: 83%, and 81%, respectively).

Table (5B), in supervision and the provision of quality in medical care, results show an overall moderate level of competence (RS: 64%-76%). Similarly, regarding applicability, results show a generally moderate level across all subdomains(RS: 67%-73%). Confirmed significant differences between the results of nurses' levels of competencies and their applicability in light of the subdomains(item numbers: 2,5, and 6), at P<0.05 and P<0.01 .

Table (6B), in the organisation and cooperation domain, results show a moderate competence level in ten out of fourteen of the subdomains (RS: 60%-76%), while only four subdomains (items 6, 7, 8, and 14) scored a high level (RS: 81%-84%). Regarding applicability, results indicated that only three subdomains were highly applicable (items 6, 7, and 8), with relative sufficiency ranging from 80% to 83%, while the remained of the subdomains showed moderate applicability (RS: 64%-77%). It has been confirmed a significant differences between the results of the two situations (level of competence and applicability) across the subdomains (items 9 and 14) at P<0.01, and P<0.05, respectively.

Table (2A): Distribution of Observed Frequencies, and Percentages according to receiving Training Courses and Comparison of Significance (N=91)

Training Courses		Groups	No.	%	C.S. (*) P-value
Received training courses?		Yes	53	58.2	P=0.142
		No	38	41.8	(NS)
Number of received training courses		One	18	34.0	$\chi 2$= 4.792
		Two	24	45.3	P=0.091
		Three	11	20.8	(NS)
Course's Contents	Chemotherapy administration	No	28	52.8	P=0.784
		Yes	25	47.2	(NS)
	Breast cancer	No	43	81.1	P=0.000
		Yes	10	18.9	(HS)
	Cancer in general	No	38	71.7	P=0.003
		Yes	15	28.3	(HS)
	Personal Protective Equipment (PPE)	No	51	96.2	P=0.000
		Yes	2	3.8	(HS)
	Electrocardiogram (ECG)	No	38	71.7	P=0.003
		Yes	15	28.3	(HS)
	Central Venous Catheter (CVC)	No	52	98.1	P=0.000
		Yes	1	1.9	(HS)
	Medical waste treatment	No	52	98.1	P=0.000
		Yes	1	1.9	(HS)
	Administrative topics and computer science	No	46	86.8	P=0.000
		Yes	7	13.2	(HS)

(*) HS: Highly Sig. at P<0.01; NS: Non Sig. at P>0.05. Testing based on the One-Sample Chi-Square test and Binomial test.

Regarding the applicability of the subdomains, results indicated that half of the studied subdomains (3, 4, 5, 7, and 9) were recorded as highly applicable in the workplace, with relative sufficiency ranging between 78% to 84%. The other half of the subdomains showed a moderate applicability range (69%-77%). It was confirmed that significant differences were achieved between the results of the two situations (level of competence and applicability) in light of the subdomains (8, and 10), at P<0.05 and P<0.01, resprctivelyTable(1B): Summary Statistics of Nurses' Competencies Concerning Assistance

Nurses' competencies	How do you evaluate the	How often is it applied in your	C.S.

regarding assistance	degree/level of your competence?						job?						(*)
	Response	No.	%	MS	SD	RS	Response	No.	%	MS	SD	RS	P-value
In drawing up a nursing plan in accordance with individual needs?	V. Low	8	8.8	2.31	0.63	0.77 M	Seldom	8	9.9	2.32	0.65	0.77 M	P=0.556 NS
	Medium	47	51.6				Sometimes	39	48.1				
	V. High	36	36.0				Often	34	42.0				
In adapting/modifying the nursing/care plan according to the individual's needs?	V. Low	14	15.4	2.23	0.70	0.74 M	Seldom	14	17.1	2.17	0.70	0.72 M	P=0.252 NS
	Medium	42	46.2				Sometimes	40	48.8				
	V. High	35	38.5				Often	28	34.1				
In recognising the patient's need for emotional support?	V. Low	10	11	2.49	0.69	0.83 H	Seldom	7	8.0	2.53	0.64	0.84 H	P=0.867 NS
	Medium	26	28.6				Sometimes	27	31.0				
	V. High	55	60.4				Often	53	60.9				
In providing ways for the patient to cope with his/her illness?	V. Low	13	14.3	2.32	0.71	0.77 M	Seldom	10	12.0	2.34	0.69	0.78 H	P=0.365 NS
	Medium	36	39.6				Sometimes	35	42.2				
	V. High	42	46.2				Often	38	45.8				
In evaluating the patient's pain symptoms?	V. Low	11	12.1	2.31	0.68	0.77 M	Seldom	8	10.1	2.34	0.66	0.78 H	P=0.728 NS
	Medium	41	45.1				Sometimes	36	45.6				
	V. High	39	42.9				Often	35	44.3				
In choosing suitable measures for easing the treatment of pain?	V. Low	9	9.9	2.27	0.63	0.76 M	Seldom	14	17.3	2.32	0.76	0.77 M	P=0.852 NS
	Medium	48	52.7				Sometimes	27	33.3				
	V. High	34	37.4				Often	40	49.4				

In comforting the patient in difficult situations?	V. Low	10	11.0	2.43	0.69	0.81 H	Seldom	12	14.6	2.35	0.73	0.78 H	P=0.055 NS
	Medium	32	35.2				Sometimes	29	35.4				
	V. High	49	53.8				Often	41	50.0				
In recognising the needs of the patient's family members?	V. Low	19	20.9	2.19	0.76	0.73 M	Seldom	19	23.8	2.07	0.74	0.69 M	P=0.025 S
	Medium	36	39.6				Sometimes	36	45.0				
	V. High	36	39.6				Often	25	31.3				
In being active with the consultation/counselling of family members?	V. Low	17	18.7	2.19	0.73	0.73 M	Seldom	11	13.9	2.35	0.72	0.78 H	P=0.393 NS
	Medium	40	44				Sometimes	29	36.7				
	V. High	34	37.4				Often	39	49.4				
In recognising the needs of the members of the family for emotional support?	V. Low	16	17.6	2.31	0.76	0.77 M	Seldom	20	24.4	2.07	0.75	0.69 M	P=0.000 HS
	Medium	31	34.1				Sometimes	36	43.9				
	V. High	44	48.4				Often	26	31.7				

Table(2B) concerning consulting, counseling and education, results shows an overall moderate level of competence with a relative sufficiency ranging between (64%- 71%). Similarly, the competencies showed a moderate level of applicability, with a range of RS of 65% to 70%. It was confirmed of achieving a significant difference between the results of the two situations(level of competence and applicability) of one subdomain (item number 6) at $P<0.05$, while no significant differences were found between the results of the two situations for the rest of the subdomains at $P>0.05$.

Table (3B), concerning diagnosis and observation domain, results shows a moderate level of competence in almost all subdomains, with relative sufficiency ranging from 64% to 74%, while high in only one subdomain (item number 2; RS: 78%). Regarding applicability, results show that all the studied subdomains have been assessed at a moderate level (RS: 64%-75%). It is confirmed achieving significant differences between the results of the two situations(level of competence and applicability) in light of the subdomains(items number: 2,3, and 5), at $P<0.05$.

Table(4B) results concerning effective actions in emergencies show that the level of respondents' competencies is divided between moderate and high levels, where half of the studied subdomains(items number: 2 and 4) have been assessed at a high assessment level with a relative sufficiency of 78% and 81%, respectively. While, subdomains (item numbers: 1 and 3) accounted for a moderate level of competence (RS: 68% and 71%, respectively). Regarding applicability, results showed that all of the studied items were assessed at a moderate level (RS: 69%-77%). Confirmed significant differences between the results of the two situations(level of competence and applicability) in light of the subdomains(item number: 4), at $P<0.05$.

Table (2B): Summary Statistics of Nurses' Competencies concerning Consulting, Counseling and Education

Nurses' competencies concerning consulting, counseling and education	How do you evaluate the level of your competence?						How often is it applied in your job?						C.S. (*) P-value
	Response	No.	%	MS	SD	RS	Response	No.	%	MS	SD	RS	
In determining the optimal time for the patient's education?	V. Low	22	24.2	2.00	0.70	0.67 M	Seldom	17	21.5	2.08	0.71	0.69 M	P=0.862 NS
	Medium	47	51.6				Sometimes	39	49.4				
	V. High	22	24.2				Often	23	29.1				
Carefully mapping out the patient's educational needs when drawing up the plan?	V. Low	27	29.7	1.91	0.71	0.64 M	Seldom	24	32.9	1.95	0.78	0.65 M	P=0.386 NS
	Medium	45	49.5				Sometimes	29	39.7				
	V. High	19	20.9				Often	20	27.4				
In offering individual consultation/counselling to the patient?	V. Low	26	28.6	2.04	0.79	0.68 M	Seldom	21	30	2.01	0.79	0.67 M	P=0.089 NS
	Medium	35	38.5				Sometimes	27	38.6				
	V. High	30	33				Often	22	31.4				
In judging/evaluating the results of the education together with the patient?	V. Low	28	30.8	1.91	0.72	0.64 M	Seldom	22	29.7	1.97	0.76	0.66 M	P=0.131 NS
	Medium	43	47.3				Sometimes	32	43.2				
	V. High	20	22				Often	20	27				
In supporting the patient to cope with the consequences of the illness in daily living?	V. Low	21	23.1	2.13	0.76	0.71 M	Seldom	17	20.7	2.10	0.71	0.70 M	P=0.095 NS
	Medium	37	40.7				Sometimes	40	48.8				
	V. High	33	36.3				Often	25	30.5				
In recognising the perception and the patient's understanding of his/her illness?	V. Low	21	23.1	2.11	0.75	0.70 M	Seldom	18	23.7	2.05	0.73	0.68 M	P=0.026 S
	Medium	39	42.9				Sometimes	36	47.4				
	V.	31	34.				Often	2	28.				

	High		1					2	9				
In interpreting the patient's state and the explanation of interventions offered?	V. Low	26	28.6	1.97	0.74	0.66 M	Seldom	23	29.9	2.00	0.78	0.67 M	P=0.305 NS
	Medium	42	46.2				Sometimes	31	40.3				
	V. High	23	25.3				Often	23	29.9				

(*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05. Evaluation Intervals (00.33 – 55.55) Low (L) ; (55.56 – 77.77) Moderate (M) ; (77.78– 100) High (H). Scoring Scales : 0 _ 3 (Very Low); 4 _ 6 (Medium); 7 _ 10 (Very High).

Table (3B): Summary Statistics of Nurses' Competencies concerning Diagnosis and Observation

Nurses' competencies concerning the diagnosis and observation	How do you evaluate the degree/level of your competence?						How often is it applied in your job?						C.S. (*)
	Response	No.	%	MS	SD	RS	Response	No.	%	MS	SD	RS	P-value
In recognising significant changes in the state of the patient's health?	V. Low	14	15.4	2.21	0.69	0.74 M	Seldom	11	13.9	2.23	0.68	0.74 M	P=0.304 NS
	Medium	44	48.4				Sometimes	39	49.4				
	V. High	33	36.3				Often	29	36.7				
In documenting significant changes in the patient's health?	V. Low	13	14.3	2.34	0.72	0.78 H	Seldom	15	19	2.24	0.75	0.75 M	P=0.011 S
	Medium	34	37.4				Sometimes	30	38				
	V. High	44	48.4				Often	34	43				
In foreseeing complications and deteriorations before measurable diagnostic signs/symptoms are available?	V. Low	20	22	2.11	0.74	0.70 M	Seldom	20	25.6	2.06	0.76	0.69 M	P=0.024 S
	Medium	41	45.1				Sometimes	33	42.3				
	V. High	30	33				Often	25	32.1				
In anticipating the patient's future health problems of the patient?	V. Low	30	33	2.01	0.82	0.67 M	Seldom	21	28	2.05	0.79	0.68 M	P=0.396 NS
	Medium	30	33				Sometimes	29	38.7				
	V. High	31	34.1				Often	25	33.3				
In foreseeing the needs of	V.	14	15.	2.	0.	0.	Seldo	1	16.	2.	0.	0.	P=0.

the patient based on your knowledge and experience related to the illness?	Low		4	19	68	73 M	m	4	7	06	63	69 M	024 S
	Medium	46	50.5				Sometimes	51	60.7				
	V. High	31	34.1				Often	19	22.6				
In analysing the patient's well-being from several perspectives?	V. Low	17	18.7	2.11	0.69	0.70 M	Seldom	22	27.5	2.01	0.75	0.67 M	P=0.086 NS
	Medium	47	51.6				Sometimes	35	43.8				
	V. High	27	29.7				Often	23	28.8				
In assessing the patient's chances of recovery?	V. Low	25	27.5	2.00	0.75	0.67 M	Seldom	23	28.4	1.94	0.71	0.65 M	P=0.140 NS
	Medium	41	45.1				Sometimes	40	49.4				
	V. High	25	27.5				Often	18	22.2				
In assessing the patient, what various strategies are available for his/her illness treatment?	V. Low	28	30.8	1.92	0.73	0.64 M	Seldom	27	36	1.91	0.79	0.64 M	P=0.114 NS
	Medium	42	46.2				Sometimes	28	37.3				
	V. High	21	23.1				Often	20	26.7				

(*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05. Evaluation Intervals (00.33 – 55.55) Low (L) ; (55.56 – 77.77) Moderate (M) ; (77.78– 100) High (H). Scoring Scales : 0 _ 3 (Very Low); 4 _ 6 (Medium); 7 _ 10 (Very High).

Table (4B): Summary Statistics of Nurses' Competencies concerning Effective Actions in Emergencies

Nurses' competencies concerning effective actions in emergencies	How do you evaluate the level of your competence?						How often is it applied in your job?						C.S. (*)
	Response	No.	%	MS	SD	RS	Response	No.	%	MS	SD	RS	P-value
1. In early identification of situations which pose a threat to life?	V. Low	23	25.3	2.05	0.75	0.68 M	Seldom	17	21.5	2.11	0.73	0.70 M	P=0.503 NS
	Medium	40	44				Sometimes	36	45.6				
	V. High	28	30.8				Often	26	32.9				
2. In taking appropriate actions in life-threatening situations?	V. Low	12	13.2	2.33	0.70	0.78 H	Seldom	7	9	2.32	0.63	0.77	P=0.071 NS
	Mediu	37	40.				Someti	3	50				

	m		7				mes	9				M	
	V. High	42	46.2				Often	32	41				
3. In planning care consistently with the resources available. In approving financial resources for adequate treatment in emergencies?	V. Low	17	18.7	2.12	0.70	0.71 M	Seldom	17	20.2	2.07	0.69	0.69 M	P=0.181 NS
	Medium	46	50.5				Sometimes	44	52.4				
	V. High	28	30.8				Often	23	27.4				
4. In promoting flexible teamwork in quickly/rapidly changing situations?	V. Low	9	9.9	2.44	0.67	0.81 H	Seldom	13	15.1	2.31	0.72	0.77 M	P=0.020 S
	Medium	33	36.3				Sometimes	33	38.4				
	V. High	49	53.8				Often	40	46.5				

(*)HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05. Evaluation Intervals (00.33 – 55.55) Low (L) ; (55.56 – 77.77) Moderate (M) ; (77.78– 100) High (H). Scoring Scales : 0 _ 3 (Very Low); 4 _ 6 (Medium); 7 _ 10 (Very High).

Table (5B): Summary Statistics of Nurses' Competencies in Supervision and Provision of Quality Medical Care

Nurses' competencies in supervision and provision of quality medical care	How do you evaluate the level of your competence?						How often is it applied in your job?						C.S. (*)
	Response	No.	%	MS	SD	RS	Response	No.	%	MS	SD	RS	P-value
In considering security measures from the medical and nursing perspective?	V. Low	16	17.6	2.26	0.74	0.75 M	Seldom	17	20.5	2.17	0.75	0.72 M	P=0.068 NS
	Medium	35	38.5				Sometimes	35	42.2				
	V. High	40	44				Often	31	37.3				
Which fields related to the patient's care need further development and research?	V. Low	18	19.8	2.13	0.72	0.71 M	Seldom	18	24.3	2.11	0.77	0.70 M	P=0.025 S
	Medium	43	47.3				Sometimes	30	40.6				
	V. High	30	33				Often	26	35.1				
In using the research results for further development of the patient's care?	V. Low	23	25.3	2.09	0.77	0.70 M	Seldom	21	28.4	2.05	0.79	0.68 M	P=0.141 NS
	Medium	37	40.7				Sometimes	28	37.8				
	V.	31	34.				Often	2	33.				

	High		1				5	8				
In including relevant knowledge in order to provide optimal care?	V. Low	17	18.7	2.14	0.71	0.71 M	Seldom 16	20.3	2.18	0.75	0.73 M	P=0.724 NS
	Medium	44	48.4				Sometimes 33	41.8				
	V. High	30	33				Often 30	38				
In a systematic assessment of the patient's satisfaction with the care provided?	V. Low	21	23.1	2.21	0.80	0.74 M	Seldom 22	26.5	2.05	0.76	0.68 M	P=0.006 HS
	Medium	30	33				Sometimes 35	42.2				
	V. High	40	44				Often 26	31.3				
In the organisation of the provision of skilled help to the patient, if necessary?	V. Low	9	9.9	2.29	0.64	0.76 M	Seldom 15	17.9	2.12	0.68	0.71 M	P=0.008 HS
	Medium	47	51.6				Sometimes 44	52.4				
	V. High	35	38.5				Often 25	29.8				
In persuading doctors to take specific/ required steps at the right time?	V. Low	33	36.3	1.91	0.80	0.64 M	Seldom 22	29.3	2.00	0.77	0.67 M	P=0.739 NS
	Medium	33	36.3				Sometimes 31	41.3				
	V. High	25	27.5				Often 22	29.3				

(*)HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05. Evaluation Intervals (00.33 – 55.55) Low (L) ; (55.56 – 77.77) Moderate (M) ; (77.78– 100) High (H). Scoring Scales : 0 _ 3 (Very Low); 4 _ 6 (Medium); 7 _ 10 (Very High).

Table(6B): Summary Statistics of Nurses' Competencies in Organisation and Cooperation

Nurses' competencies in organisation and cooperation	How do you evaluate the level of your competence?						How often is it applied in your job?						C.S. (*)
	Response	No.	%	MS	SD	RS	Response	No.	%	MS	SD	RS	P-value
In making decisions regarding the patient's care, taking into consideration the exceptional circumstances given?	V. Low	20	22	2.18	0.77	0.73 M	Seldom	10	13.3	2.27	0.68	0.76 M	P=0.253 NS
	Medium	35	38.5				Sometimes	35	46.7				
	V. High	36	39.6				Often	30	40				
In developing the patient's	V. Low	19	20.	2.	0.	0.	Seldo	1	16.	2.	0.	0.	P=0.

care within a multidisciplinary team?			9	18	75	73 M	m	3	3	20	70	73 M	545 NS
	Medium	37	40.7				Sometimes	38	47.5				
	V. High	35	38.5				Often	29	36.3				
In contributing to the further development of multidisciplinary treatment paths?	V. Low	23	25.3	2.02	0.73	0.67 M	Seldom	14	18.2	2.13	0.69	0.71 M	P=0.739 NS
	Medium	43	47.3				Sometimes	39	50.6				
	V. High	25	27.5				Often	24	31.2				
In coordination with the nursing activities of the multidisciplinary team?	V. Low	17	18.7	2.19	0.73	0.73 M	Seldom	10	12.5	2.21	0.65	0.74 M	P=0.323 NS
	Medium	40	44				Sometimes	43	53.8				
	V. High	34	37.4				Often	27	33.8				
In foreseeing times of extreme strain due to a lack of personnel, in order to avoid such times?	V. Low	17	18.7	2.29	0.76	0.76 M	Seldom	19	22.1	2.17	0.77	0.72 M	P=0.098 NS
	Medium	31	34.1				Sometimes	33	38.4				
	V. High	43	47.3				Often	34	39.5				
In keeping up the team spirit?	V. Low	11	12.1	2.51	0.71	0.84 H	Seldom	6	7.1	2.48	0.63	0.83 H	P=0.162 NS
	Medium	23	25.3				Sometimes	32	38.1				
	V. High	57	62.6				Often	46	54.8				
In acquiring the social support from other nurses?	V. Low	9	9.9	2.53	0.67	0.84 H	Seldom	8	9.6	2.46	0.67	0.82 H	P=0.086 NS
	Medium	25	27.5				Sometimes	29	34.9				
	V. High	57	62.6				Often	46	55.4				
In recognising the needs of other colleagues for support and help?	V. Low	10	11	2.49	0.69	0.83 H	Seldom	8	9.4	2.39	0.66	0.80 H	P=0.169 NS
	Medium	26	28.6				Sometimes	36	42.4				

	V. High	55	60.4				Often	41	48.2				
In responsible action in view of restricted financial resources?	V. Low	17	18.7	2.23	0.75	0.74 M	Seldom	15	18.1	2.11	0.68	0.70 M	P=0.005 HS
	Medium	36	39.6				Sometimes	44	53				
	V. High	38	41.8				Often	24	28.9				
In being familiar with the regulations/policies of my organisation regarding the delegation/division of labour and coordination of duties?	V. Low	14	15.4	2.25	0.71	0.75 M	Seldom	11	13.4	2.24	0.68	0.75 M	P=0.270 NS
	Medium	40	44				Sometimes	40	48.8				
	V. High	37	40.7				Often	31	37.8				
In the planning of continuous care with the available resources?	V. Low	17	18.7	2.16	0.72	0.72 M	Seldom	14	17.5	2.19	0.71	0.73 M	P=0.369 NS
	Medium	42	46.2				Sometimes	37	46.3				
	V. High	32	35.2				Often	29	36.3				
In using information technology (e.g., computers) in the workplace?	V. Low	39	42.9	1.81	0.80	0.60 M	Seldom	19	34.5	1.93	0.79	0.64 M	P=0.109 NS
	Medium	30	33				Sometimes	21	38.2				
	V. High	22	24.2				Often	15	27.3				
In coordination with the overall patient's care?	V. Low	13	14.3	2.21	0.68	0.74 M	Seldom	11	13.6	2.22	0.67	0.74 M	P=0.549 NS
	Medium	46	50.5				Sometimes	41	50.6				
	V. High	32	35.2				Often	29	35.8				
In giving your colleagues constructive feedback?	V. Low	7	7.7	2.44	0.64	0.81 H	Seldom	12	14	2.30	0.70	0.77 M	P=0.016 S
	Medium	37	40.7				Sometimes	36	41.9				
	V. High	47	51.6				Often	38	44.2				

(*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05. Evaluation Intervals (00.33 – 55.55) Low (L) ; (55.56 – 77.77) Moderate (M) ; (77.78– 100) High (H). Scoring Scales : 0 _ 3 (Very Low); 4 _ 6 (Medium); 7 _ 10 (Very High).

Table (7B): Summary Statistics of Nurses' Competencies in Training / Education

Nurses' competencies in training/education	How do you evaluate the degree/level of your competence?						How often is it applied in your job?						C.S. (*)
	Response	No.	%	MS	SD	RS	Response	No.	%	MS	SD	RS	P-value
In monitoring novices and beginners in the field?	V. Low	16	17.6	2.24	0.74	0.75 M	Seldom	15	18.5	2.11	0.69	0.70 M	P=0.011 S
	Medium	37	40.7				Sometimes	42	51.9				
	V. High	38	41.8				Often	24	29.6				
In coordination with the mentoring of the nursing students in your ward?	V. Low	22	24.2	2.15	0.79	0.72 M	Seldom	10	13.5	2.26	0.68	0.75 M	P=0.473 NS
	Medium	33	36.3				Sometimes	35	47.3				
	V. High	36	39.6				Often	29	39.2				
At the technical level of the nursing students?	V. Low	27	29.7	2.05	0.81	0.68 M	Seldom	19	23.5	2.12	0.76	0.71 M	P=0.873 NS
	Medium	32	35.2				Sometimes	33	40.7				
	V. High	32	35.2				Often	29	35.8				
In the training of the nursing team for the performance of nursing operations?	V. Low	22	24.2	2.12	0.77	0.71 M	Seldom	13	17.3	2.21	0.72	0.74 M	P=0.876 NS
	Medium	36	39.6				Sometimes	33	44				
	V. High	33	36.3				Often	29	38.7				
In developing training programs for novices in the ward?	V. Low	32	35.2	2.00	0.84	0.67 M	Seldom	20	29.4	2.09	0.82	0.70 M	P=0.601 NS
	Medium	27	29.7				Sometimes	22	32.4				
	V. High	32	35.2				Often	26	38.2				
Are you training others within your area of responsibility?	V. Low	18	19.8	2.21	0.75	0.74 M	Seldom	17	22.7	2.12	0.75	0.71 M	P=0.011 S
	Medium	36	39.6				Sometimes	32	42.7				
	V.	37	40.				Often	2	34.				

	High		7				6	7					
In offering consultation to the nursing team?	V. Low	12	13.2	2.36	0.71	0.79 H	Seldom 8	10.3	2.44	0.68	0.81 H	P=0.001 HS
	Medium	34	37.4				Sometimes 28	35.9				
	V. High	45	49.5				Often 42	53.8				

(*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05; Evaluation Intervals (00.33 – 55.55) Low (L) ; (55.56 – 77.77) Moderate (M) ; (77.78– 100) High (H); Scoring Scales : 0 _ 3 (Very Low); 4 _ 6 (Medium); 7 _ 10 (Very High).

Table(7B) in regard the nurses' competencies in the training/education domain, results show a general moderate level of competence(RS: 67%-75%) in vast majority of the subdomains, except in one subdomain(item number: 7), where respondents' competence level is high(RS: 79%). Regarding the applicability, results indicated that only one subdomain is highly applicable(item number: 7), with a relative sufficiency(81%), while the other items showed a moderate applicability(RS: 70%-75 %). It has confirmed significant differences between the results of the two situations (level of competence and applicability) in light of the subdomains (item numbers 1,6 and 7) at P<0.05 and P<0.01.

Table 1C) shows an overall moderate level of competency in cancer patients care (PGMS: 58.7%). Similarly, each of the seven domains7 (100%) have accounted for a moderate level, with a Percentile Grand/Global Mean of Score (PGMS) ranging between 50.5% and 65.2%

Table (2C) results show a weak relationship between the redistribution of scores in the domain of "Evaluation of Nurses' Competencies in Caring for Cancer Patients(self-assessed)" and respondents' socio-demographical characteristics, as no statistically significant relationships were observed (P > 0.05).

Table (1C): Descriptive Statistics of Nurses' Competencies in Caring for Cancer Patients

Domains	No.	PGMS	PPSD	PPSE	Min.	Max.
1.1 Nurses' competencies concerning assistance	91	65.2 M	18.5	1.94	0.00	100
1.2 Nurses' competencies concerning Consulting, counselling and education	91	50.5 M	25.3	2.65	0.00	100
1.3 Nurses' competencies concerning the diagnosis and observation	91	55.6 M	24.3	2.55	0.00	100
1.4 Nurses' competencies in effective action in emergencies	91	61.8 M	24.2	2.53	0.00	100

1.5 Nurses' competencies in supervision and provision of quality medical care	91	57.4 M	23.9	2.50	0.00	100
1.6 Nurses' competencies in organisation and cooperation	91	62.4 M	21.3	2.23	7.14	100
1.7 Nurses' Competencies in Training / Education	91	58.2 M	27.9	2.93	0.00	100
Nurses' Competencies in Caring for Cancer Patients (self-assessment)	91	58.7 M	18.0	1.88	18.42	100

(*) Evaluate Score: Low (L) (00.00 – 33.33); Moderate (M) (33.34 – 66.66); High (H) (66.67– 100)

Table(2C): Relationships between "Evaluation of Nurses' Competencies in Caring for Cancer Patients" with the Studied Respondents' Socio-Demographical Characteristics Variables

Socio-Demographical Characteristics Variables	Groups	Nurses' competencies in caring for cancer patients (self-assessed)				
		≤ Md		> Md		C.S. P-value
		No.	%	No.	%	
Gender	Male	22	47.8	23	51.1	CC = 0.033 P=0.754 NS
	Female	24	52.2	22	48.9	
Age Groups Yrs.	20 _	21	45.7	19	42.2	CC = 0.137 P=0.883 NS
	25 _	10	21.7	11	24.4	
	30 _	7	15.2	6	13.3	
	35 _	4	8.7	2	4.4	
	40 _	2	4.3	4	8.9	
	45 _ 50	2	4.3	3	6.7	
Educational Qualification	Diploma	40	87.0	39	86.7	CC = 0.004 P=0.967 NS
	Bachelor	6	13.0	6	13.3	
Years of experience as a nurse	1 _ 5	35	76.1	31	68.9	CC = 0.116 P=0.873 NS
	6 _ 10	3	6.5	6	13.3	
	11 _ 15	4	8.7	4	8.9	
	16 _ 20	3	6.5	3	6.7	
	21 and above	1	2.2	1	2.2	

Years of experience in cancer care	1 _ 5	38	82.6	39	86.7	CC = 0.108
	6 _ 10	7	15.2	6	13.3	P=0.583
	11 _ 15	1	2.2	0	0.00	NS

(*)HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05; Testing are based on a contingency coefficient test.

DISCUSSION

Regarding the socio-demographic characteristics, findings indicate that more than two-thirds of nurses are under 30 years old, accounting for 61 (67.1%), with a mean of 28.31 years and a standard deviation of 7.24 years. About three quarters of them having a total years of experience less than six years as a nurse66(72.5%), and similarly in cancer care in specific, since they accounted 77(84.6%), and finally more than fifty of the studied nurse's staff was working at the position in less than two years, since they are accounted 53(58.2%). Indicating a young workforce consists primarily of nurses at the early stages of their professional career. The findings align with those of the study conducted by Hussain, B., & Abdulkareem, A., in 2023, that evaluates nurses' knowledge, attitudes, and practices in handling anti-neoplastic drugs (ANDs) at Hiwa Hematology/Oncology Hospital in Sulaymaniyah, Iraq, as most of their samples (59.3%) were young, aged between (26-35); while regarding experience, their findings contrasts with ours as most of their samples had a range of (5-10) years of experience.

In terms of educational qualifications, most participants had a diploma degree, accounting for 79 (86.8%). It is believed that this high prevalence of younger nurses in oncology care is primarily driven by ongoing annual recruitment and the institution's continuous expansion which may contribute to the increasing need for additional nursing staff. These results align with those reported by Iacorossi (2020) in the study titled "Role and Skills of the Oncology Nurse: An Observational Study," in which 54.3% (n = 38) of participants similarly held a diploma. This alignments suggests that diploma-level education remains predominant among oncology nursing staff across varied clinical settings. The prevalence of diploma degrees among oncology nurses in different sittings, may be due to several key factors, such as healthcare institutions' staffing policies and the greater number of diploma graduates than university graduates; additionally, lower education costs and faster workforce entry make diploma degrees a more common choice than Bachelor's degrees, especially among nurses seeking early employment in this specialized field.

Regarding gender, participants were distributed evenly between males and females (P=1.000), with 45 (49.5%) and 46 (50.5%), respectively. The findings contrast with the previous studies by Iacorossi et al. (2020), in which the gender distribution showed a predominance of females (78.6%) over males (20.0%). These results may be attributed to the size of the group willing to participate, as the participants were selected based on their availability and willingness to join the study.

In terms of the wards they work in, most were currently working in men's and women's lounges, with 38 (41.8%) and 42 (46.2%) respectively, while only 11 (12.1%) were assigned to both lounges. This distribution could be attributed to operational policies adopted by the healthcare institution, tailored to each ward's actual needs, to maintain a balanced allocation of nursing staff in accordance with patient care requirements. According to Kim et al. (2024), healthcare institutions use organizational criteria to determine the number of nurses per ward based on case volume and the level of specialized care required, leading to natural variation in workforce allocation across units.

In regard the position, most participants were direct care givers, since they are accounted 80(87.9%), while only a small fraction occupy therapy preparation 1(1.1%), administrative roles 9(9.9%), and continuous education leadership1(1.1%), distributed equally on morning and night shifts(P=1.000), since they are accounted 46(50.5%), and 45(49.5%) respectively. The findings are consistent with those reported in the study "Role and Skills of the Oncology Nurse: An Observational Study" by Iacorossi et al. (2020), in which 93.0% (n = 65) of participants held the position of nurse and 7.0% (n = 5) served as nurse coordinators. This pattern is likely related to institutional workforce policies, healthcare service demands, and trends in the distribution of professional roles.

Further in terms of training courses, only 53(58.2%) of the participants had jointed training courses, while leftover 38(41.8%) of them does not jointed. Chemotherapy administration training courses accounted for the largest share (25, 47.2%), while the remaining courses (breast cancer, cancer in general, PPE, ECG, CVC, medical waste treatment, administrative/ computer science) ranged from 1 (1.9%) to 15 (28.3%), this highlights that actual uptake or involvement in these training areas remains low, despite participants' dominance in jointing courses over none. This involvement and variation could be related to work pressure, limited career incentives, or a lack of practical relevance…etc. The findings align with those reported

in the study by Anisa N. R., Erika K. A., & Rachmawaty R., in 2018, titled "Nurses' Spiritual Care Competencies to Patients with End Stage Breast Cancer". The study indicated that most nurses had attended training courses, with the most common training being in chemotherapy administration (29.2%).

Regarding the nurses' competence, shown in Table 1C, the findings indicate that nurses at Kirkuk Oncology and Hematology Center perceive themselves as having a moderate level of competence in cancer care (PGMS = 58.7%). Furthermore, concerning the specific care areas in cancer care as shown in Tables(1B-7B), nurses' competencies in cancer care is generally within the moderate level across the entire seven domains(PGMS=50.5% - 65.2%.), where the highest score was reported in the domain " patient assistance", while the lowest score was in " consulting, counseling and education". This finding aligns with those reported by Li, Z., & Wang, L. (2024) in China, in their cross-sectional study "The relationship between core competence and perceived professional benefits among oncology specialist nurses". Similarly, their study revealed a generally moderate level of core nursing competencies with an average score of 224.28 ± 7.95. While this findings contrast with the previous study by Masa'deh, R., Al-Haraizahe, A. A. L., Al-Akash, H. Y., Bakkali, H., & Jarrah, S. (2023)," Determinants of nurses' self-reported professional competence in Jordan", where the self-assessed scores revealed a high level of competence at (mean = 83.12 ± 9.45). This contrast could be related to differences in the environments between the two studies.

More specifically, at the item-specific level of the 57 subdomains distributed across the seven domains, nurses showed a moderate level of competence, with Relative Sufficiency scores spanning from 60% to 77% in the most (47 subdomains). Indicating that nurses possess a good level of competence in cancer care, while showing a high level of skills (RS.=%78-84%) in specific areas such as: "recognizing patient's emotional support needs, comforting patients in difficult situations; documenting significant patient health changes; responding appropriately to life threatening situations, promoting flexible teamwork in dynamic situations; maintaining team spirit, acquiring social support from peers, recognizing colleagues' needs for support, constructive feedback to colleagues; team consultation". In the same way, most subdomains (48) showed a moderate level of applicability (RS. = 64%-77%), while the remaining subdomains were highly applicable in the workplace (RS. = 78%-84%). Indicating that most of the competences as perceived by nurses are re- applied regularly by nurses in the work place, while some are more often applied, for instance of situations that are applied utmost:" the recognitions of patient's needs of emotional support, provision ways to cope with illness, pain symptoms evaluation, comforting the patient under challenging situations, the consultation/counseling of family members; keeping up the team spirit, acquiring social support of other colleagues, recognition of other colleagues needs for support and help; offering consultation for the nursing team", suggesting that such competencies are deeply implanted in the set of practices in the sitting environment.

Regarding competence-applicability consistency, the study findings indicated a generally matched pattern emerged across most items(73,6%) at P>0.05. That is, the more competent a nurse felt in a given area, the more likely they were to apply it in the workplace. On the other hand, significant deviations were observed in certain areas where perceived competence exceeded perceived applicability significantly, such gaps in applicability emerged in certain areas of competencies such as in: critical thinking in regard patients' and families' physical, emotional and educational needs; in the anticipation of the complications and deterioration in health status; in the documentation of significant changes in patient's health status; and the promotion of flexible teamwork in quickly changing situations. Furthermore, the gap includes the provision of systematic assessment of the patient's satisfaction with the care provided; organization of the provision of skilled help to the patient; the ability to identify the fields related to the patient's condition that need further development and research; and in responsible action in view of restricted financial resources. Moreover, in giving colleagues a constructive feedback; and in monitoring novices and beginners, and training them in the areas of responsibility, also yielded results that were lower than expected. This is often due to limited practical opportunities or insufficient ongoing guidance and training, which creates a gap between possessing the skill and consistently applying it. However, nurses' applicability on the subject of "offering consultation for the nursing team" was higher than their perception of their competence at P<0.01. Indicating that the applicability of this skill is considered regardless of decreased competence in it, and this is probably related to a strong spirit of collaboration, regardless of skill level, or likely stems from clinical demands that necessitate collaborative consultation, despite competence level. The finding aligns with the findings of Meretoja et al. (2004), in which nurses generally reported a strong relationship between perceived competence and its clinical application, where 77% of the competences were applied in workplace frequently.

In terms of relationships between nurses' competencies and socio-demographic variables such as age group, educational qualification, and years of experience, analyses showed weak relationship as no significant differences were accounted at P-values > 0.05. This suggests that variations in demographic factors did not directly influence nurses' competence in caring for cancer patients. Our findings contrast with the previous studies by Flinkman et al. (2017), Iacorossi

et al. (2020), and Meretoja et al. (2004), which reported positive correlations between nursing competence and demographic factors. This difference with their findings could be due to differences in the environment, sample population variation, assessment methodology, or sociocultural factors. This lack of association between competence and socio-demographic characteristics is probably related to the identical job roles, comparable training opportunities, and reliance on self-assessment that reflects personal confidence more than actual skill level.

CONCLUSION

The study concludes that nurses at Kirkuk Oncology and Hematology Center possess a generally fair level of competence in cancer care (PGMS = 58.7%(moderate)). Their best area of competency shown in the assistance abilities, while their less capabilities shown in the consulting and education abilities. Further, nurses' self- assessments revealed a general alignment between their perceived competency levels and their actual application in their daily practice, with notable gaps were found in certain areas where competence either exceeded the practice or vice versa, indicating the need for further focus. Additionally, nurses' competencies didn't show to be affected by their demographic factors. Continuous, targeted training programs are recommended for a further enhancements in oncology nurses' competencies. Furthermore, it's essential identifying and addressing the gaps between nurses' professional competencies and their workplace application to ensure optimal patient care.

Limitations

- Data is collected at a single point in time. Limiting the ability to track changes in nursing competencies over time.
- The study is conducted exclusively at the Kirkuk Oncology and Hematology Center, the only specialized oncology sitting available at the time, affecting generalizability.
- Shortage of existing researches in this area, particularly within the Iraqi context, which limits the ability to contextualize findings within a broader body of literature.
- The Nurse Competence Scale relied on self-reported data, which may introduce bias through overestimating or underestimating of competencies.
- The length of the questionnaire and participants' professional responsibilities may have contributed to participants fatigue, affecting participants' responses, as fatigue can lead to rushed responses.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

ACKNOWLEDGEMENT

The authors express their sincere gratitude to all the nurses who participated in this study, as well as to Kirkuk Health Department, Kirkuk Oncology and Hematology Center, and Kirkuk Nursing College in Iraq for their contributions.

REFERENCES

1. Aljohani, F. R., Alenezi, M. M. S., Aljohani, M. R., Alerwi, N. A., Almohammadi, S. M., Alzahrani, M. A. A., ... & Alkhusayfi, F. M. (2024). Critical Analysis of the Role of Oncology Nurses in Holistic Cancer Care. Journal of Ecohumanism, 3(8), 4173-4183.
2. Anisa, N. R., Erika, K. A., & Rachmawaty, R. (2018). Nurse's spiritual care competencies to patient with end stage breast cancer. International Journal of Public Health Science (IJPHS), 7(4), 268.
3. Bray, F., Laversanne, M., Sung, H., Ferlay, J., Siegel, R. L., Soerjomataram, I., & Jemal, A. (2024). Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: a cancer journal for clinicians, 74(3), 229-263.
4. Bray, F., Laversanne, M., Weiderpass, E., & Soerjomataram, I. (2021). Cancer as a leading cause of premature death worldwide. Cancer, 127(16), 3029-3030.
5. De Luca, E., & Sena, B. (2021). Searching for a professional identity: a qualitative study of the oncology nurses role in a multidisciplinary breast-unit team. Acta bio-medica : Atenei Parmensis, 92 S2, e2021506 .
6. Flinkman, M., Leino-Kilpi, H., Numminen, O., Jeon, Y., Kuokkanen, L., & Meretoja, R. (2017). Nurse Competence Scale: a systematic and psychometric review. Journal of advanced nursing, 73(5), 1035-1050.
7. Hussain, B., & Abdulkareem, A. (2023). Knowledge, Attitude, and Practice of Nurses About Handling AntiNeoplastic Drugs at Hiwa Hospital in Sulaimaniyah, Iraq. Journal of Zankoy Sulaimani-Part A, 25(1), 14-14.
8. Iacorossi, L., Gambalunga, F., Muzio, M.D., Terrenato, I., Sayed, S.E., Ricci, F., Pulimeno, L.A., & Notarnicola, I. (2020). Role and skills of the oncology nurse: an observational study. Annali di igiene : medicina preventiva e di comunita, 32 1, 27-37 .
9. Kelly, D., Fernández-Ortega, P., Arjona, E.T., & Daniele, B. (2021). The role of nursing in the management of patients with renal and hepatic cancers: A systematic literature review. European journal of oncology nursing : the official journal of European Oncology Nursing Society, 55, 102043 .
10. Khademi, E., Abdi, M., Saeidi, M., Piri, S., & Mohammadian, R. (2021). Emotional intelligence and quality of nursing care: A need for continuous professional development. Iranian Journal of Nursing and Midwifery Research, 26(4), 361-367.
11. Kim, Y., Lee, K., & Jung, M. (2024). Improvement in nurse staffing ratios according to policy changes:

a prospective cohort study. BMC nursing, 23(1), 335.

12. Masa'deh, R., Al-Haraizahe, A. A. L., Al-Akash, H. Y., Bakkali, H., & Jarrah, S. (2023). Determinants of nurses' self-reported professional competence in Jordan. Jordan Journal of Applied Science-Natural Science Series, 17.
13. Mattiuzzi, C., & Lippi, G. (2019). Current cancer epidemiology. Journal of epidemiology and global health, 9(4), 217-222.
14. Meretoja, R., Isoaho, H., & Leino-Kilpi, H. (2004). Nurse competence scale: development and psychometric testing. Journal of advanced nursing, 47(2), 124-133.
15. Mohammed, H. A., Shakoor, J. A., Mahmood, N. A., Kumait, A. S., & Kareem, A. M. (2023). Prevalence of cancer cases among population of Kirkuk, Iraq from 2016-2020. Rawal Medical Journal, 48(1), 3-3.
16. Silva, M.D., & Bezerra, M.L. (2020). ATUAÇÃO DO ENFERMEIRO NO ATENDIMENTO AOS CUIDADOS CONTINUADOS NA ONCOLOGIA.
17. Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (2021). Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: A Cancer Journal for Clinicians, 71(3), 209–249. https://doi.org/10.3322/CAAC.21660
18. World Health Organization. (2020). Latest global cancer data: Cancer burden rises to 19.3 million new cases and 10.0 million cancer deaths in 2020. https://www.iarc.who.int/news-events/latest-global-cancer-data-cancer-burden-rises-to-19-3-million-new-cases-and-10-0-million-cancer-deaths-in-2020/
19. Islam, B. H., & Venkataraman, R. (2021). Cost-effectiveness analysis of breast and lung cancer: A review study. Journal of University of Shanghai for Science and Technology, 23(12), 1186–1193.
20. Young, A. M., Charalambous, A., Owen, R. I., Njodzeka, B., Oldenmenger, W. H., Alqudimat, M. R., & So, W. K. (2020). Essential oncology nursing care along the cancer continuum. The lancet oncology, 21(12), e555-e563.