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Development and psychometric evaluation of a tool to assess oncology nurses' occupational health needs

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Abstract:

BACKGROUND: Oncology nurses are confronted with various occupational hazards; consequently, it is of great importance to identify and measure their occupational health needs. Due to the fact that standard tools are not available to assess these needs, this study was conducted to develop a tool for assessing oncology nurses' occupational health needs.

MATERIALS AND METHODS: This study consisted of two phases from 2020 to 2021. The first phase was item generation and tool design. The initial development of the item pool was based on the result of the qualitative study and literature search. The second phase was item reduction and psychometric evaluation of the formulated tool including, face, content, and construct validity and reliability. Construct validity was assessed using exploratory factor analysis and convergent validity with the participation of 300 oncology nurses. The reliability of the tool was assessed using internal consistency (Cronbach's alpha) and test-retest (intra-cluster correlation coefficient).

RESULTS: The mean content validity index (CVI) of the tool was 0.95. The results of exploratory factor analysis showed that this tool consisted of 69 items and four factors, explaining 65.88% of the variance. The results of the convergent validity assessment showed a significant positive correlation between the mean scores of occupational health needs and occupational stress ($P < 0.0001$ and $r = 0.40$). Cronbach's alpha coefficient (0.98) and tool stability (0.98) confirmed the appropriate reliability of the tool.

CONCLUSION: The developed tool is recommended as a valid and reliable tool for assessing oncology nurses' occupational health needs that can be used both in practice and in future studies.

Keywords:

Cancer, occupational health, oncology nursing, psychometrics, tool

Introduction

Nurses are most vulnerable to occupational hazards. They are confronted with biological, chemical, physical, and psychosocial hazards in their work environment.^[1] On the other hand, employment in cancer wards is extremely challenging, and the working conditions of these wards are dissimilar and more unfavorable compared to other wards.^[2,3] These nurses' occupational health is threatened due to exposure to high-risk drugs and patients' challenging conditions

and high mortality, all of which lead to stress, grief, burnout, and anxiety.^[4-6]

The results of studies in Istanbul and Izmir, Turkey, show that oncology nurses' working conditions are nonstandard, and these nurses face problems and deficiencies regarding occupational safety and health.^[7-9] Facing cancer patients' death process and the cultural challenges in communicating with them have adversely affected oncology nurses' mental health in Jordan.^[10] According to a study in Portugal, supporting oncology nurses' health is achieved by optimizing organizational conditions, improving

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inter-team communication, valuing the nursing profession, providing continuous training programs, and designing stress management programs.^[6] Occupational safety and working conditions of oncology nurses in Iran are nonstandard, and most of their health problems have been related to financial issues, occupational safety, stressful workplace, and the impact of the job on their personal life.^[11,12]

The literature review shows that oncology nurses face challenges and shortcomings in the workplace; however, fewer studies have specifically addressed oncology nurses' occupational health needs. Prior to policy-making and planning to support this group of nurses' occupational health, their needs regarding occupational health should be identified and measured from these nurses' perspectives to determine the type and level of the need. To this end, employing tools to measure occupational health needs is of utmost importance. According to an investigation by the research team, no standard tool is available to measure oncology nurses' occupational health needs.

Evaluating oncology nurses' occupational health needs and related factors in the workplace can help nursing managers plan by making scientific decisions to address workplace challenges, promote nurses' health, and ultimately provide desirable and quality services to patients. This study aimed to design and psychometrically assess the oncology nurses' occupational health needs.

Materials and Methods

Study design and setting

The tool for assessing the oncology nurses' occupational health needs was developed in two phases: Phase One for item generation and development of the tool, through interviewing nurses and literature review, and Phase Two for testing other psychometric properties.

First phase: Item generation

Two methods were used to develop items pool. A conventional qualitative content analysis was designed. This phase consisted of individual, face-to-face, in-depth, semi-structured interviews performed on 52 oncology nurses and 11 other key informants. Interviews were transcribed carefully. Then, they were analyzed and controlled by the research team. According to the previous qualitative study by Soheili *et al.* (2021)^[13] and using an inductive approach, the main concepts of oncology nurses' occupational health needs were explained in nine subcategories and three main categories. The main categories included "the need for self-care," "professional competence," and "the need for a safe and healthy workplace." In this step, subcategories, codes, and categories extracted in the previous study (Soheili,

et al., 2021)^[13] were used inductively to design the items and dimensions of the tool.

In the other method for the next step, available texts were reviewed and the items pool was completed. Studies searched in Persian and English through databases, Science Direct, PubMed, SID, Scopus, Web of Sciences, CINHAL, and Magiran. We aimed to inventory all literature about Oncology Nurses' occupational Health needs.

Second phase: Item reduction and psychometric evaluation

Item selection and assessment of face validity

The face validity of the tool was assessed by both qualitative and quantitative methods. In the qualitative assessment, 20 oncology nurses were requested to comment on the items' clarity, difficulty, comprehensibility, and writing style. The items were then modified and reworded based on their comments.

To quantitatively assess the face validity, the same 20 participating oncology nurses were requested to rank the items' importance based on a 5-point Likert scale. The item impact scale was used to determine the item impact score. The impact factors equal to or larger than 1.5 indicate that the item is convenient for subsequent analyses.

Assessment of content validity

In order to qualitatively evaluate the content validity, the designed tool was provided to 20 experts (including oncologists, nursing, and occupational health faculty members, and persons experienced in tool development) to obtain their opinions on issues such as the completeness of the construct measurement, terminology appropriateness, the proper placement of items, and the relevance of each item to the whole item.

The quantitative content validity assessment of the tool was performed in two rounds by 21 experts. In the first round, the designed tool was provided to 13 experts, and three of these experts attended the second round. Based on Lawshe's table and considering the number of experts, items with a content validity ratio (CVR) <0.54 were eliminated. In the second round, a 2-hour panel meeting consisting of 11 experts was held. This group of experts included 6 nursing faculty members with sufficient experience and skills in the field of cancer and instrumentation, the nursing manager of the university with a long history of work in the oncology wards, an oncologist, a chemotherapy head nurse, an educational supervisor of the oncology hospital, and an occupational health faculty member experienced in instrumentation. In the second round of content validity assessment, based on Lawshe's table and considering the number of experts

attending the meeting, items with a CVR of less than 0.59 were eliminated. After the calculation of CVR, the content validity index (CVI) index was calculated. Items with a CVI $\geq 70\%$ were retained, and items with a lower score were removed. Furthermore, average of the CVIs for all the items on the scale was calculated as CVI of the overall scale CVI (S-CVI/average). S-CVI/Ave of 0.9 or higher is considered acceptable. The proportion of items on the scale that achieve a relevance scale of 3 or 4 by all experts was calculated as S-CVI/universal (S-CVI/UA).

Assessment of construct validity

Study participants and sampling

Before assessment of construct validity, a pilot study was carried out on a sample of 30 oncology nurses, and the reliability coefficient of the entire questionnaire was calculated using Cronbach's alpha. After the pilot study, a quantitative study was conducted to determine the construct validity using exploratory factor analysis.

According to the guide of Comrey and Lee (1992), which considers the sample size of 300 individuals as good for conducting exploratory factor analysis,^[14,15] the sample size of 300 participants was considered using the convenience sampling method. Inclusion criteria included the willingness to participate in the study, 1 year of work experience in oncology wards, and having at least a bachelor's degree. The exclusion criteria were unwillingness to continue cooperation in the study.

Data collection tool and technique

Due to the COVID-19 pandemic at this stage of the study, the designed tool was implemented electronically using social media. The response rate of 30% for online questionnaires is considered acceptable.^[16] In the present study, the response rate was 60%, which was acceptable.

To measure the sampling adequacy and the suitability of the correlation matrix, Kaiser-Meyer-Alkin (KMO) output and Bartlett's Test of Sphericity were used, respectively.

Determinant score was calculated to examine multicollinearity. As a rule of thumb, a determinant score greater than 0.00001 indicates the absence of multicollinearity.

Principal Component Analysis (PCA) was used to extract the factors. Moreover, multiple criteria such as eigenvalues above one, scree plot, parallel analysis, percentage of variance explained by factors, and the degree of factor-construct consistency were used to decide whether to retain the factors in the analysis. In the present study, according to the correlation matrix, the degree of correlation between items was higher than 0.3; accordingly, no item was removed. After extracting the

factors and relevant items, in order to maintain each item, a turning point of 0.5 was considered as the minimum required factor loading. Numerous researchers have considered 0.5 as the minimum factor loading.^[15,17-19]

Moreover, item commonality between 0.4 and 0.7 is preferred.^[20] In the present study, the commonality rate of all items of the designed tools was higher than 0.5 and acceptable. The factor extraction step was repeated several times by increasing and reducing the number of factors and using Varimax rotation until it was finally observed that with a 4-factor construct, more meaningful and interpretable factors were obtained.

After exploratory factor analysis, convergent validity was evaluated. The linear correlation between the total score of oncology nurses' occupational health needs and the Osipow occupational stress questionnaire was calculated and compared. The Osipow Occupational Stress Questionnaire consists of six dimensions. This 60-item questionnaire is scored based on a 5-point Likert scale, ranging between 60 and 300. The results of a study in Iran (2015) showed that the reliability of this tool was favorable by test-retest, and Cronbach's alpha coefficient was achieved as 0.89.^[21]

All statistical analyses were performed using SPSS version 19.0 (SPSS Inc., Chicago, IL), except for the Parallel Analysis, which was conducted using Monte Carlo PCA for Parallel Analysis

Reliability

Cronbach's alpha was calculated for each factor and the total tool. The normal distribution of data was tested by the Kolmogorov-Smirnov test. Cronbach's alpha coefficient was calculated for an 86-item tool in a pilot study with a sample size of 30 participants. In the next step, this coefficient was calculated for the developed tool with 86 items and a sample size of 300 individuals before performing the exploratory factor analysis. Moreover, after performing factor analysis, Cronbach's alpha was calculated for the whole 69-item tool and each extracted factor. Following factor analysis, in a test-retest method, the questionnaire was tested on 30 oncology nurses twice at intervals of 14 days, and the intra-cluster correlation coefficient was calculated.

The final version of the tool was developed with 69 items and four factors: "organizational and professional support", "psychological and moral competencies", "psychosocial security in the workplace", and "self-care agency."

Ethical considerations

This study was approved by the ethics committee of ** with the code of ethics (**). Ethical considerations,

including obtaining permission from the administrators of the medical centers, ensuring the confidentiality of personal information, and obtaining informed written consent, were observed.

Results

Item generation

After the qualitative analysis of the individual interviews, 174 items were obtained using the quotations of the participants. The wording of items was revised through a literature review. Inappropriate and duplicate items were removed during several research team meetings, and ultimately, 130 items remained. As a result, the initial tool with 130 items was prepared for validation and psychometric assessments.

Face validity

During the qualitative face validity evaluation, the items were modified in terms of writing. The wordings of six items were changed according to the opinion of the participants and research team.

In the quantitative face validity evaluation, no item was eliminated since all item scores were higher than 1.5. The retained items' importance scores ranged from 1.58 to 4.85.

Content validity

In the content validity evaluation phase in the first round, 36 unnecessary items, including items with a score of less than 0.54, were removed. Moreover, nine items were merged due to overlap and formed four items. Therefore, in the first round of content validity evaluation, 41 items were removed, and 89 items were retained. In the second round of content validity evaluation, seven unnecessary items were removed, and four items were added according to the participants' suggestions in the panel meeting. Based on the results of these two rounds, 48 items were removed, and four items were added. The CVR in the retained items ranged from 0.63 to 1. In addition, the results of this section showed that the maximum and the minimum value of the CVI of the retained items were 1 and 0.75, respectively. The average CVI of the tool (S-CVI/Ave) was 0.95 and of the tool (S-CVI/UA) was 0.85.

Construct validity

The Kaiser-Meyer-Olkin measure was 0.97, and the Bartlett's test of sphericity was significant ($\chi^2 = 23826/32$, $P < 0.0001$), considering the significance of the Bartlett test, performing factor analysis in the sample is justifiable [Table 1]. The determinant score was 0.009 that indicated the absence of multicollinearity. The result of the exploratory factor analysis of the 86-item questionnaire was the extraction of four 69-factor items. This 4-factor construct had the ability to explain 65.88% of

the variance [Figure 1, Tables 1 to 5]. After the Varimax rotation, the factors 1–4 explained 20.65%, 20.39%, 17.50%, and 7.34% of the variance, respectively. Furthermore, based on the parallel analysis results, actual values were only four factors above random eigenvalues. The factors were named according to the content of the items. The first (24 items), second (19 items), third (19 items), and fourth (7 items) factors were named "organizational and professional support," "psychological and moral competencies," "psychosocial security in the workplace," and "self-care agency," respectively.

Examining the convergent validity

The results of the Pearson statistical test showed a statistically significant correlation between the overall score of the two Oncology Nurses' Occupational Health Needs and the Osipow Occupational Stress questionnaires [Table 6]. In addition to the total score, the correlation between scores of four factors extracted from exploratory factor analysis of the Occupational Health Needs Questionnaire and six factors of the Osipow Occupational Stress Questionnaire was calculated and compared. The results showed a statistically significant correlation between these factors ($P < 0.0001$).

Tool reliability

To measure the reliability, Cronbach's alpha was calculated separately for the whole tool as well as for each factor of the tool. Initially, Cronbach's alpha coefficient was calculated as 0.97 for the 86-item questionnaire in the pilot study. In the next step, the coefficient was calculated

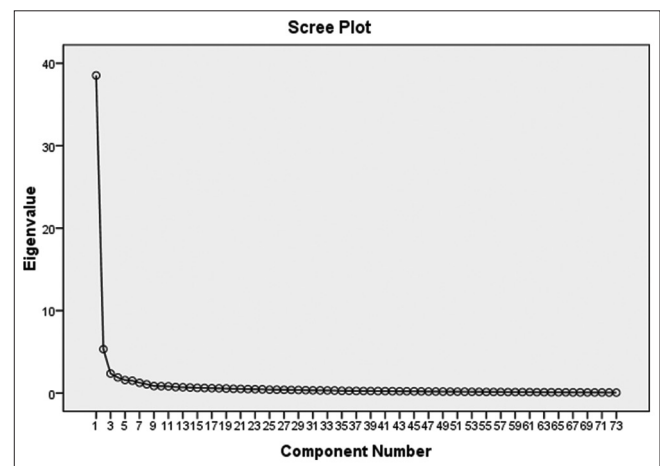


Figure 1: A scree plot representing the extracted factors based on the eigenvalue obtained

Table 1: Kaiser-Meyer-Olkin sampling adequacy index (KMO) and Bartlett's Test of Sphericity (BT) results

KMO statistics (sampling adequacy)	0/97
Bartlett's test, Chi-square approximation (BT)	23826/32
Degree of freedom (df)	2628
Significance level (BT)	$P < 0/0001$

Table 2: Rotated matrix of items related to the first factor: Organizational and professional support

Item number	Item	Factor loading
70	I should have access to free healthcare services in my workplace.	0/73
78	In my workplace, the ratio of nurses to patients should be proportional.	0/73
83	Occupational health professionals should monitor occupational safety issues.	0/72
71	I should have access to welfare facilities (pavilion rooms, sports centers, kindergarten, parking) in my workplace	0/72
75	Occupational diseases and injuries should be investigated and followed up.	0/71
76	Necessary measures should be taken to eliminate the causes of occupational diseases and injuries.	0/71
84	The organization should provide safety conditions and chemotherapy standards.	0/71
72	I should have proper nutritional refreshments (snacks, milk, and supplements) in my workplace.	0/70
73	My health should be checked through periodic specialized examinations.	0/70
74	In case of sickness, the organization should support me.	0/69
82	I should be encouraged to observe the principles of occupational safety.	0/68
69	The possibility of participation in recreational tours and programs should be regularly provided.	0/67
65	In case of financial problems, I should be supported by the organization.	0/66
81	I should participate in constant needs-based training courses.	0/66
80	I should receive specialized training courses to start working in the oncology wards.	0/65
85	The safety of workplace equipment should be evaluated by medical equipment specialists.	0/64
67	There should be a balance between my job duties and individual abilities.	0/64
79	I should have access to nurse assistants to reduce workload.	0/60
86	I should have access to professional associations of oncology nursing.	0/59
66	Attention should be paid to my personal preferences in scheduling shifts.	0/58
62	I should use two-month paid leave per year.	0/57
64	My working hours should be reduced.	0/52
63	My job description should be straightforward.	0/52
68	I should have independence and freedom of action in care.	0/73

Table 3: Rotating matrix of items related to the second factor: Psychological and moral competencies

Item number	Item	Factor loading
21	I should be psychologically prepared to start working in the ward.	0/79
20	I should experience less stress in caring for a cancer patient.	0/76
22	I should be able to show appropriate emotional reactions in the face of a patient's death.	0/76
32	I should have a sense of usefulness in caring for the patient.	0/76
19	I should have control over the concern about causing injuries to the patient during care.	0/73
26	I should know about the ethical principles in performing my professional duties.	0/73
25	I should maintain my composure in difficult work situations.	0/72
30	I should have a positive attitude toward cancer nursing.	0/72
27	I should provide care to patients according to their needs.	0/71
31	I should have high motivation to perform tasks.	0/71
24	I should control my excessive anxiety when a medication error occurs.	0/68
18	I should control my fear of cancer.	0/66
17	I should be able to understand the feelings and emotions of others.	0/65
16	I should be able to control my emotions.	0/63
9	I should be optimistic about the process of life from birth to death.	0/62
23	I should control concerns about the physical side effects of contacting chemotherapy drugs	0/59
8	I should increase my life expectancy.	0/58
14	I should be able to have compassion for patients.	0/58
15	I should be able to establish professional relationships with cancer patients.	0/56
5	I should be trained about proper physical posture while caring for the patient.	0/55
13	I should be physically able to perform my job duties in the ward.	0/50

as 0.98 for the designed tool with 86 items before performing the exploratory factor analysis. Moreover, Cronbach's alpha coefficient was calculated for the final version of tool with 69 items and each extracted factor. The results showed that Cronbach's alpha coefficient

for questionnaire factors and the final version tool was 0.92–0.97 and 0.98, respectively. In addition, the intra-cluster correlation coefficient was obtained through test-retest (ICC = 0.986). Consequently, the developed tool enjoyed good reliability in all stages.

Table 4: Rotated matrix of items related to factor three: Psychosocial security in the workplace

Item number	Item	Factor loading
48	I should feel relaxed in the workplace.	0/76
49	I should have the opportunity to participate in organizational decision-making.	0/75
50	There should be an atmosphere of trust and confidence in the workplace.	0/72
53	I should have job security.	0/71
44	I should be supported by administrators and senior managers.	0/70
47	My workplace should make me feel happy and cheerful.	0/70
55	I should be honored and appreciated by receiving material rewards.	0/66
46	I should have respectful inter-professional relationships with other staff.	0/65
51	My performance should be evaluated based on competency criteria.	0/65
57	I should have opportunities for personal development in the organization.	0/65
60	I should be supported by managers in the face of workplace violence.	0/64
45	The level of administrators' expectations should be in accordance with my job description.	0/63
54	There should be order and coordination between different work units in the workplace.	0/61
61	The payment system of nursing services should be reviewed.	0/61
52	Duties should be fairly assigned to nurses.	0/60
59	In my organization, attention should be paid to job stressors in oncology wards.	0/59
43	I should be supported by other staff in the workplace.	0/54
38	I should have adequate access to personal protective equipment.	0/51
36	I should have access to a standard space for safe chemotherapy.	0/50

Table 5: Rotated matrix of items related to factor four:Self-care agency

Item number	Item	Factor loading
3	I should observe safety principles while performing my duties	0/71
2	I should be aware of the necessity of personal protective equipment.	0/66
1	I should learn about the dangers of working in the oncology ward.	0/65
6	I should be aware of the safety instructions for working with chemotherapy drugs.	0/63
4	I should get trained in health-promoting behaviors (proper diet, mobility, and activeness)	0/58

Table 6: Pearson correlation coefficient between the scores of oncology nurses' occupational health needs questionnaire and the scores of Osipow Occupational Stress questionnaire

Occupational health needs questionnaire factors	Occupational stress questionnaire factors	Organizational and professional support	Psychological and moral competencies	Workplace psychosocial security	Self-care agency
Role Workload	Pearson correlation	0/54	0/43	0/47	0/36
	The significance level	$P<0/0001$	$0001/P<0$	$P<0/0001$	$P<0/0001$
	Number	300	300	300	300
Role incompetence	Pearson correlation	0/23	0/22	0/22	0/15
	The significance level	$P<0/0001$	$P<0/0001$	$P<0/0001$	$P<0/0001$
	Number	300	300	300	300
Role duality	Pearson correlation	0/20	0/19	0/20	0/12
	The significance level	$P<0/0001$	$P<0/0001$	$P<0/0001$	$P<0/0001$
	Number	300	300	300	300
Role range	Pearson correlation	0/24	0/23	0/19	0/14
	The significance level	$P<0/0001$	$P<0/0001$	$P<0/0001$	$P<0/0001$
	Number	300	300	300	300
Responsibility	Pearson correlation	0/25	0/29	0/27	0/20
	The significance level	$P<0/0001$	$P<0/0001$	$P<0/0001$	$P<0/0001$
	Number	300	300	300	300
The physical environment	Pearson correlation	0/32	0/31	0/22	0/24
	The significance level	$P<0/0001$	$P<0/0001$	$P<0/0001$	$P<0/0001$
	Number	300	300	300	300
Overall score of the occupational stress questionnaire	Overall score of the Occupational Health Needs Questionnaire				
	Pearson correlation	0.40	$P<0.0001$	300	
	The significance level				
	Number				

Discussion

According to the present study results, one of the significant dimensions of oncology nurses' occupational health needs in Iran is organizational and professional support. Compared to other factors, this factor obtained a higher score due to the factor loading of items and the highest variance (20.65%) with 24 items. A study in Jordan showed that organizational support for oncology nurses is required to improve their mental health.^[2]

Extraction of item 15, "I should receive specialized training courses for working in the oncology ward" as the subcategory of organizational and professional support with a factor loading of 0.661, indicates oncology nurses' need to receive specialized training. The results of studies in Iran and Turkey showed that oncology nurses need training in the safety standards of handling chemotherapy drugs.^[7,8,11] Similar to developed countries, in the majority of developing countries, oncology nursing ought to be included in the undergraduate nursing curriculum as a specialized field, nursing students be trained, and specialized roles be defined for oncology nurses.^[22-24]

Due to the fact that there are no formal training courses for oncology nurses in the Iranian educational system, the formation of professional associations for these nurses can be helpful; as a result, the formation of professional associations for these nurses can be helpful. Consistent with the present study results, a study in Nigeria highlighted the need to form professional organizations and associations for these nurses in developing countries due to the lack of specialized training for oncology nurses.^[24] However, the results of a study in Maryland showed that the majority of oncology nurses (96%) had been trained in the safe handling of chemotherapy drugs by the Oncology Nursing Society (ONS).^[25]

The factor analysis results led to the formation of the second factor, "Psychological and moral competencies," consisting of 19 items. This factor enjoyed the capability to explain 20.39% of the variance of the latent trait. The results of Saifan *et al.*'s (2019)^[10] study likewise showed having sufficient experience, and psychological readiness to work in these wards affected oncology nurses' mental health. In the development and psychometric evaluation of the tool conducted in Brazil (2019), items with the concept of communication and interpersonal skills, theoretical and clinical knowledge, and observance of ethical and professional principles in the care of cancer patients were introduced as required competencies for oncology nurses.^[26]

The issue is additionally crucial due to the fact that oncology nurses are exposed to psychological hazards in

the workplace, which require mental health support.^[27,28] The previous study by Soheili *et al.* (2021)^[14] in Iran showed that oncology nurses in their workplace faced various job stressors; therefore, the necessary measures and strategies to deal with job stress should be developed and implemented. The results of studies in Turkey and Saudi Arabia have likewise emphasized the need for psychological support and holding training and counseling sessions on stress management as well as providing a pleasant workplace for these nurses.^[29-31]

In addition to psychological hazards, oncology nurses are confronted with specific physical injuries in the workplace. Extraction of item No. 61, "I should have sufficient access to personal protective equipment," and item No. 62, "I should have access to standard space for implementing chemotherapy," which were subcategories of psychosocial security of the workplace, confirmed that access to the appropriate physical condition could provide peace of mind for oncology nurses regarding protection against chemotherapy hazards. The results of studies in Iran, Turkey, Jordan, and Portugal showed that oncology nurses complained about the inadequacy of the physical environment, lack of resources, particularly medical equipment, and insufficient space in treatment rooms.^[2,7,11,32,33]

Appropriate physical environment design is a component of a healthy workplace affecting nurses' health- and safety-related issues.^[34,35] The results of factor analysis in the psychometric evaluation of the tool led to the formation of a fourth factor: "self-care agency," consisting of 7 items. In this factor, item number 63, "I should observe the safety principles while performing my duties," which accounted for the largest amount of factor loading, highlighted the importance of adherence to the safety principles and standards while working with high-risk drugs.

A study in Australia indicates that self-care and training programs for oncology nurses are required to promote their health and create positive emotions.^[36] The results of the study by Ross *et al.* (2017) showed that nursing managers could reinforce the culture of self-care.^[37]

The role of spiritual self-care is as highly important as the role of physical self-care in ensuring oncology nurses' occupational health. Oncology nurses may experience despair and absurdity of life due to witnessing frequent deaths and patients' declining process. The results of the study by Copeland *et al.* (2013)^[38] showed that one of the strategies to promote oncology nurses' psychosocial health was to promote self-care in their daily routine.

Limitations and recommendation

One limitation of the study is the inclusion of oncology

nurses in university hospitals and provided no data about these needs among oncology nurses in private hospitals or outpatient clinics, and hospitals in different locations have different cultures and organizational atmospheres, which may lead to diversity among nurses and the sample can't be representative of all nurses. Future studies are recommended to compare the occupational health needs of oncology nurses in different cancer care centers.

Conclusion

The findings of the present study indicated that a safe and healthy workplace is required to maintain and promote oncology nurses' occupational health; therefore, it is essential to take into account the optimal physical environment and safety standards in the workplace design. In addition, considering the psychological harms of working in these wards, improving mental health in the workplace is of utmost importance. The organization and its policies should also act as supportive elements for nurses' health. In addition to the role of the workplace and the optimization of working conditions in warranting nurses' occupational health, individuals' role in taking responsibility for self-care as well as their abilities ought to be considered.

Innovation, acceptable validity and reliability, clarity, the limited number of items, and instant completion are among the important features of the tools developed in the present study. The designed tool can be used to assess oncology nurses' occupational health needs and plan intended programs and interventions based on their needs in all fields.

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Conflicts of interest

There are no conflicts of interest.

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