

Original/Research Paper

Effect of continuous care model on the lifestyle of cancer patients: A quasi-experimental study

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Abstract

This study aims to determine the effect of continuous care model on the lifestyle of cancer patients. A quasi-experimental investigation was conducted at the Islamic Azad University of Chalus, Iran. This study involved 30 cancer patients attending chemotherapy centers, categorized into two groups: an intervention group comprising 15 individuals and a control group also consisting of 15 patients, in the 2020. The data collection instruments utilized in this study comprised a demographic questionnaire encompassing variables such as age, gender, cancer history, marital status, and literacy level, alongside Miller and Smith's Lifestyle Questionnaire. In the intervention group, the mean age of the patients was 57.46 (SD=15.9), while in the control group, it stood at 62.52 (SD=12.03). Regarding the history of cancer, the mean was 4.8 (SD=1.8) in the intervention group and 5.26 (SD=3.63) in the control group. The Wilcoxon test indicated a significant difference in lifestyle scores before and after the intervention (P=0.01) in the intervention group. Here, the Wilcoxon test revealed no significant disparity between pre-and post-intervention (P=0.34) in the control group. Before the intervention, the Mann-Whitney test did not exhibit a significant difference between the intervention and control groups (P=0.09). However, following the intervention, the Mann-Whitney test demonstrated a noteworthy discrepancy between the intervention and control groups (P=0.02). In sum, given the efficacy observed in enhancing the lifestyle of cancer patients, the continuous care model holds promise as a health behavior applicable in both the prevention and rehabilitation of chronic patients.

Keywords: Continuous Care Model, Lifestyle, Cancer Patients, Nursing, Nurses.

1 | Introduction

Cancer stands as the foremost prevalent life-threatening ailment [1] and has been notably labeled as the affliction emblematic of the 21st century [2]. Presently, over 7 million individuals globally grapple with this condition [3], with prognostications indicating a substantial surge, surpassing 27 million afflicted individuals worldwide within the forthcoming two decades [2]. Notably, those affected by cancer endure considerable suffering [4]. Frequently, this malady is concomitant with myriad psychological ramifications, significantly compromising the quality of life for cancer-stricken individuals [3, 5], as cancer, irrespective of life stage, presents an incredibly distressing and profound ordeal [6].

Regarded as a chronic ailment, cancer significantly disrupts patient and caregiver lifestyles [2], imposing its protracted impact spanning weeks, months, and even years [7]. The processes of hospitalization and treatment correspondingly escalate anxiety and apprehension among patients [8, 9].

To date, several models have been devised for bedside application, tailored to cater to patient needs [10]. Among these, the continuous care model stands out as a notably effective approach to health promotion [11, 12]. This clinical model, recognized for its efficacy, constitutes a structured procedure facilitating enhanced interaction between patients and healthcare providers

[13]. Research findings underscore its profound impact on lifestyle enhancement and the provision of quality care [14]. Given the multifaceted nature of lifestyle, encompassing social, economic, and cultural dimensions, its pivotal role in shaping patients' quality of life is well established [14, 15]. Implementing this model enables accurate identification of patient issues while fostering their motivation and involvement, alongside their families, in addressing life challenges [16]. The concept of persistent or continuous care embodies a systematic framework fostering effective communication in delivering healthcare services [17]. This model, by enhancing self-care capabilities among cancer patients, notably elevates their quality of life and augments overall health outcomes [16]. Hence, recognizing the pivotal role of lifestyle in enhancing the quality of life for cancer patients, the application of care models becomes imperative [18]. Incorporating a healthy lifestyle regimen among cancer patients serves as a preventive measure against chronic disease complications and exacerbation of symptoms [19]. In a broader context, education assumes a pivotal role in augmenting patient quality of life and lifestyle [20, 21]. Consequently, considering the significance of nursing care models in enhancing the quality of life among cancer patients, this study was undertaken to examine the impact of the continuous care model on the lifestyle of individuals grappling with cancer.

2 | Methods

2.1 | Study design

A quasi-experimental study was conducted at the Islamic Azad University of Chalus, Iran, with the primary objective of examining the impact of the continuous care model on the lifestyle of individuals diagnosed with cancer.

2.2 | Ethics consideration

This research implementation received approval from the University Research Council, and adherence to ethical standards was overseen by the Bioethics Committee of the Islamic Azad University, Chalus Branch, Iran, denoted by protocol number IR.IAU.CHALUS.REC.1398.007. Written informed consent was obtained from all participants. Before the commencement of the study, the researcher provided comprehensive explanations regarding the study's objectives, ensuring participant safety and maintaining anonymity throughout the research process. Additionally, participants were explicitly assured of their right to withdraw from the study at any stage.

2.3 | Participants

This quasi-experimental study involved 30 cancer patients attending chemotherapy centers, categorized into two groups: an intervention group comprising 15 individuals and a control group also consisting of 15 patients, in the 2020. The study's inclusion criteria encompassed patients referred to chemotherapy centers, diagnosed with cancer for a minimum duration of 6 months, demonstrating awareness of temporal and spatial aspects. Exclusions comprised individuals devoid of chronic mental illnesses as per medical records, those without recent stressful experiences within the past six months, and those unwilling to partake in the research.

2.4 | Sample size

The research sample size was determined utilizing a study by Asheri et al., (2022) parameters, which included an effect size of 1.37, a test power of 95%, a significance level of 0.05, and a 95% confidence interval, leading to a calculated sample size of 30 individuals [16]. Initially, eligible participants meeting the study criteria were selected based on availability. Subsequently, from this pool of eligible individuals, 30 were allocated into two groups (an intervention group and a control group) each comprising 15 participants.

2.5 | Intervention

The data collection instruments utilized in this study comprised a demographic questionnaire encompassing variables such as age, gender, cancer history, marital status, and literacy level, alongside Miller and Smith's Lifestyle Questionnaire. Miller and Smith originally designed the latter in 1988, establishing its validity and reliability with an alpha coefficient of 0.80. Respondents answered 20 questions on a 5-point Likert scale (ranging from 1 for "always" to 5 for "never"), resulting in scores between 20 and 100. Higher scores denoted a more distressing and unhealthier lifestyle, with a range between 76-100 indicating an extremely vulnerable lifestyle [22]. Furthermore, the questionnaire underwent validation and retranslation in Iran, achieving a reliability score with a Cronbach's alpha coefficient of 0.86 [23], which was corroborated by Ghorbani Taghliabad et al., (2018) [24].

The study protocol obtained approval from the University Research Council and adhered to ethical standards established by the Biological Ethics Committee of Chalos Islamic Azad University. Before the research commencement, participants received comprehensive explanations about the study's objectives, safety measures, and anonymity preservation, with the option of withdrawal at any stage. Written informed consent was obtained from all participants.

Before the intervention, the intervention group completed the demographic and lifestyle questionnaires. Subsequently, the intervention group underwent a 20-30-minute intervention session facilitated by university faculty members and a specialist physician. Over eight weeks, the intervention group received biweekly short message service (SMS) reminders focusing on health, diet, medication adherence, doctor's appointments, and health-related behaviors. The control group received routine nursing care.

Two weeks after the final SMS reminder, participants in both groups completed the lifestyle questionnaire again, with each completion taking approximately 10-15 minutes and the researcher was present to address any queries.

2.5 | Statistical analysis

The data analysis was executed utilizing SPSS software (version 21.0, SPSS Inc., Chicago, IL, USA). Descriptive statistics, encompassing means (standard deviation [SD]) for continuous variables and frequency (percentage) for categorical variables, were presented. Additionally, various statistical tests such as chi-square, Mann-Whitney, Wilcoxon, and analysis of covariance (ANCOVA) were employed in this study. A significance level of 0.05 was considered.

3 | Results

3.1 | Participants

In the intervention group, the mean age of the patients was 57.46 (SD=15.9), while in the control group, it stood at 62.52 (SD=12.03). Regarding the history of cancer, the mean was 4.8

(SD=1.8) in the intervention group and 5.26 (SD=3.63) in the control group. No significant disparity emerged between the two groups concerning these variables ($P>0.05$). The Chi-square test revealed no statistically significant distinctions between the intervention and control groups concerning gender ($P=0.51$), marital status ($P=0.65$), and literacy level ($P=0.42$).

3.2 | Effect of the continuous care model on the lifestyle of cancer patients

As shown in Table 1, In the intervention group, the mean lifestyle score before intervention was 57.46 (SD = 15.9), which increased to 64.66 (SD = 8.3) post-intervention. The Wilcoxon test indicated a significant difference in lifestyle scores before and after the intervention ($P=0.01$). Conversely, in the control group, the mean lifestyle score was 54.93 (SD=6.7) before the intervention and 57.8 (SD=9.4) after. Here, the Wilcoxon test revealed no significant disparity pre- and post-intervention ($P=0.34$). Before the intervention, the Mann-Whitney test did not exhibit a significant difference between the intervention and control groups ($P=0.09$). However, following the intervention, the Mann-Whitney test demonstrated a noteworthy discrepancy between the intervention and control groups ($P=0.02$).

Upon conducting ANCOVA and accounting for the pre-test effect, the analysis revealed a significant impact of the continuous care model on the lifestyle of cancer patients ($\text{Eta}=0.42, P<0.01$). This suggests that approximately 42% of the observed alterations in the intervention group's lifestyle scores may be attributed to the intervention's influence through the continuous care model.

Table 1. Lifestyle of cancer patients before and after intervention (N=30).

	Groups		P-value
	Control (N=15)	Intervention (N=15)	
Before	54.93 (SD=6.70)	57.46 (SD=15.90)	0.09*
After	57.80 (SD=4.90)	64.60 (SD=8.30)	0.02*
P-value	0.34**	0.01**	

Values are given as a mean for continuous variables.
*P-value was obtained with a Wilcoxon test.
**P-value was obtained with a repeated measure Mann-Whitney U test.

4 | Discussion

The findings underscore the efficacy of the continuous care model in enhancing the lifestyle of cancer patients. Lifestyle stands as a pivotal challenge post-diagnosis, exerting a significant decline [25]. Consequently, leveraging nursing models and theories plays a crucial role in bolstering self-care and elevating the quality of life among cancer patients [3]. In a study by Moghaddam Tabrizi et al., (2020), the validated continuous care model within the nursing domain demonstrated notable effectiveness in enhancing patient lifestyle and augmenting the quality-of-care

provision [26]. Enhancing the quality of life in individuals grappling with cancer bears implications in minimizing disease duration, heightening treatment satisfaction, and ameliorating living conditions [5].

Similar investigations have highlighted the applications of the continuous care model within nursing practice. A study by Mohmadi & Hojjati (2019) demonstrated that this model contributes to enhancing the sleep quality of patients [10]. A study by Proctor & Herschman (2014) showcased the model's efficacy in

aiding drug withdrawal among individuals grappling with substance abuse [27]. Moreover, Allahyari et al., (2017) indicated that the continuous care model effectively fosters self-care behaviors in patients, thereby enhancing their overall quality of life [28]. These interventions and care programs, aimed at improving lifestyle, notably contribute to patient satisfaction and elevate hope and motivation throughout the treatment continuum [14].

A study by Rahim et al., (2009) underscored the impact of the continuous care model on the perceived quality of life among hemodialysis patients' spouses [13]. This model has been linked to reduced anxiety and stress levels among caregivers responsible for chronic patients [29]. Follow-up care emerges as a crucial element in enhancing patients' cognitive status [30]. Defined as an ongoing process, continuous care establishes an effective and interactive channel of communication between clients and caregivers, aimed at recognizing needs, sensitizing clients to adopt continuous health behaviors, and aiding in the maintenance, improvement, and preservation of their health [12]. Implementing continuous care strategies, including education on treatment adherence and dietary guidelines, contributes to enhancing the quality of life among cancer patients [31]. The identification and investigation of health-threatening factors among individuals with cancer hold significant potential in both preventing and promoting health within this population [19].

A study by Asheri et al., (2022) demonstrated the positive impact of the continuous care model on self-care among individuals diagnosed with colon cancer, highlighting its potential for improvement [16]. This underscores the recommendation for nurses to integrate nursing models like the continuous care model into the care protocols for these patients. This care model's application may serve as a viable surrogate for promoting correct health behaviors [19]. Notably, education emerges as a crucial element in enhancing the quality-of-care delivery [32, 33]. Employing continuous care methods alongside adherence therapy reminders not only mitigates complications associated with chronic diseases but also empowers individuals affected by these conditions [34, 35].

Overall, it is evident that achieving the objectives outlined in the follow-up care model, encompassing assessment, continuity, and ensuring ongoing care, holds significant importance [12]. The primary aim of follow-up care revolves around formulating and implementing tailored programs aimed at enhancing patient acceptance, insight, and effective engagement. A notable outcome attributed to this model is the control of diseases and a reduction in associated complications [28].

4.1 | Limitations

A potential limitation within the study exploring the impact of the continuous care model on the lifestyle of cancer patients may stem from the relatively modest sample size, which might compromise the robustness and generalizability of the findings. Additionally, the study's follow-up duration might have been constrained, potentially restricting a comprehensive evaluation of the continuous care model's enduring influence on patients' lifestyles. Furthermore, extraneous variables beyond the scope of the continuous care model, such as concurrent treatments, unaccounted lifestyle adjustments, or individual response diversities, could have affected outcomes without complete consideration within the study's framework.

4.2 | Recommendations for future research

Future investigations aiming to evaluate the impact of the continuous care model on the lifestyle of cancer patients would benefit from several recommendations to augment comprehensiveness. Longitudinal studies featuring extended follow-up durations are advisable to gauge the enduring effects of the continuous care model on lifestyle outcomes among cancer patients across time. Controlled trials of larger sample sizes would be advantageous to substantiate and reinforce the reliability of findings regarding the model's influence on lifestyle outcomes. Furthermore, exploring the factors affecting patient adherence and compliance with the continuous care model is essential, warranting an investigation into strategies aimed at enhancing engagement and ensuring sustained effectiveness.

5 | Conclusions

In sum, given the efficacy observed in enhancing the lifestyle of cancer patients, the continuous care model holds promise as a health behavior applicable in both the prevention and rehabilitation of chronic patients. Notably, this model's attributes of being straightforward, cost-effective, and yet impactful underscore its potential. Hence, health managers and practitioners must integrate these care models to elevate the standard of nursing care.

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Authors' contributions

Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work: NH, MS, FB, SM; Drafting the work or revising it critically for important intellectual content: NH, MS, FB, SM; Final approval

of the version to be published: NH, MS, FB, SM; Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved: NH, MS, FB, SM.

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This research implementation received approval from the University Research Council, and adherence to ethical standards was overseen by the Bioethics Committee of the Islamic Azad University, Chalus Branch, Iran, denoted by protocol number IR.IAU.CHALUS.REC.1398.007. Before participation, all individuals provided informed consent after receiving detailed information about the study's aims. Participants were explicitly informed of their right to withdraw from the study at any time if they chose to do so.

Competing interests

We do not have potential conflicts of interest with respect to the research, authorship, and publication of this article.

Availability of data and materials

The datasets used during the current study are available from the corresponding author on request.

Using artificial intelligent chatbots

None.

References

1. Liu Q, Guo Z, Li G, Zhang Y, Liu X, Li B, et al. Cancer stem cells and their niche in cancer progression and therapy. *Cancer Cell Int*. 2023;23(1):305.
2. Guerra-Martín MD, Casado-Espinosa MDR, Gavira-López Y, Holgado-Castro C, López-Latorre I, Borralló-Riego Á. Quality of Life in Caregivers of Cancer Patients: A Literature Review. *Int J Environ Res Public Health*. 2023;20(2):1570.
3. Paryab S, Hojjati H, Hekmatipour N. The Effect of Johnson Behavioral Theory on the Self-efficacy of Mothers of Children with Cancer. *Pajouhan Sci J*. 2022;20(2):87-94.
4. Hojjati H, Hekmati Pour N, Khandousti S, Mirzaali J, Akhondzadeh G, Kolangi F, et al. An Investigation into the Dimensions of Prayer in Cancer Patients. *Relig Health*. 2015;3(1):65-72.
5. Lewandowska A, Rudzki G, Lewandowski T, Próchnicki M, Rudzki S, Laskowska B, et al. Quality of Life of Cancer Patients Treated with Chemotherapy. *Int J Environ Res Public Health*. 2020;17(19):6938.
6. Isfahani P, Arefy M, Shamsaii M. Prevalence of Severe Depression in Iranian Women with Breast Cancer: A Meta-Analysis. *Depress Res Treat*. 2020;2020:5871402.
7. Emerson ND, Tabuenca K, Bursch B. End-of-Life Care in Patients with Cancer 16-24 Years of Age. *Curr Oncol Rep*. 2022;24(2):195-202.
8. Mahkooyeh SA, Dargahi M, Rasad R, Kazemi N, Ganjivatan K, Hojjati H. The Effect Of Prayer On The Hemodynamic Status Of Patients After Surgery. *Int J Med Invest*. 2023;12(3):104-110.
9. Sadeghi Z, Sahebanmaleki M, Roodposhti ME, Eshaghzadeh M, Ahmadi M, Shafiei Z, et al. The Effect of Betty Newman System Model on Anxiety of Patients Undergoing Endoscopy at Torbat Heydariyeh 9th Day Hospital. *Clin Schizophr Relat Psychoses*. 2021;15(6):1-4.
10. Mohmadi S, Hojjati H. The effect of continuous care model on sleep quality in veterans with post-traumatic stress disorder referred to psychiatric clinics of Alborz province. *J Mili Med*. 2019;21(4):418-424.
11. Shahidi F, Rennert-May E, D'Souza AG, Crocker A, Faris P, Leal J. Machine learning risk estimation and prediction of death in continuing care facilities using administrative data. *Sci Rep*. 2023;13(1):17708.
12. Yazdani E, Parsaee M, Gilak K, Jafari F, Kazemi M, Khaloobaghi E. The Effect Of Continuous Care Model On Infant Sleep Habits. *Int J Med Invest*. 2022;11(1):163-170.
13. Rahim A, Alhani F, Ahmadi F, Gholyaf M, Akhoond MR. Effects of a continuous care model on perceived quality of life of spouses of haemodialysis patients. *East Mediterr Health J*. 2009;15(4):944-950.
14. Senmar M, Azimian J, Noorian S, Aliakbari M, Chegini N. Relationship between spiritual intelligence and lifestyle with life satisfaction among students of medical sciences. *BMC Med Educ*. 2023;23(1):520.
15. Kazemi M, Haghparast A, Jafari F, Neisi L, Kabusi M. The Relationship between Irrational Beliefs and Quality of Life in Schizophrenic Patients. *Clin Schizophr Relat Psychoses*. 2021;15(4):1-4.
16. Asheri S, Nasrollah S, Nasrabadi T. The effect of Continuous Care Model on self-care in patients with colon cancer. *J Nurs Educ*. 2022;11(5):68-79.
17. Salehipour s, Ghaljeh M, Navidian A, Sarani H. Impact of Continuous Care Model on the Quality of Life of Patients with Thalassemia Major: A Clinical Trial Study. *Evid Based Care J*. 2021;10(4):59-66.
18. Rezaee Farahabadi M, Naeimi E, Kalantar Hormozi A. Study of Life Expectancy Factors in Cancer Patients with Islamic Lifestyle Focus. *J Islam Life Style*. 2023;7(1):11-21.
19. Abdi Zarin S, Masoumi H, Tavalaye Nejad Z. Comparison of Lifestyle, Coping Strategies with Stress and Resilience in Women with Breast Cancer and Healthy Women. *Iran J Cancer Care*. 2023;2(1):55-65.

20. Mazroei R, Monemi Gohari E, Ghadermazi M, Latifi N, Hojjati H, Hekmati Pour N. The Effect of Home-Based Pulmonary Rehabilitation on Asthmatic Pediatric Quality of Life. *J Health Rep Technol.* 2023;9(3):e13757.
21. Valipour Eskandarkolaii E, Hekmatipour N, Hojjati H. The Effect of Spiritual Self-Care Training on the Severity of Insomnia of Diabetic Adolescents. *Complement Med J.* 2023;13(1):28-35.
22. Miller LH. The miller-smith lifestyle assessment inventory. Brookline: Biobehavioral Associates; 1988.
23. Barati H, Rezaei F, Karimzadeh H. Prediction smoking cigarette due to variables, parenting and life style in male student in Islamic azad university of khomeinishahr. *Knowl Res Appl Psychol.* 2018;19(71):81-90.
24. Ghorbani Taghlidabad B, Tasbihsazan Mashhadi R. Investigating the Relationship Between Sensory Processing Sensitivity and Life Style With Stress in Patients With Irritable Bowel Syndrome. *Pract Clin Psychol.* 2018;6(4):239-248.
25. Armbruster SD, Brow K, Locklear T, Frazier M, Harden SM. Mixed-method approach to informing a lifestyle intervention to improve the survivorship of patients with endometrial cancer. *Gynecol Oncol.* 2024;180:160-167.
26. Moghaddam Tabrizi F, Rajabzadeh H, Eghtedar S. Effects of the Continuous Care Model on the Health-Promoting Lifestyle in Breast Cancer Survivors: A Randomized Clinical Trial. *Holist Nurs Pract.* 2020;34(4):221-233.
27. Proctor SL, Herschman PL. The continuing care model of substance use treatment: what works, and when is "enough," "enough?". *Psychiatry J.* 2014;2014:692423.
28. Allahyari J, Shirani N, Mansouri A, Sargolzaei MS. Effect of Continuous Care Model on Self-care Behaviors in Patients with Diabetes. *J Diabetes Nurs.* 2017;5(4):332-340.
29. Rahimi A, Ahmadi F, Gholyaf M. The effects of Continuous Care Model on depression, anxiety, and stress in patients on hemodialysis. *Nephrol Nurs J.* 2008;35(1):39-43.
30. Saxena P, Grella CE, Messina NP. Continuing Care and Trauma in Women Offenders' Substance Use, Psychiatric Status, and Self-Efficacy Outcomes. *Women Crim Justice.* 2016;26(2):99-121.
31. Zuniga KB, Chan JM, Ryan CJ, Kenfield SA. Diet and lifestyle considerations for patients with prostate cancer. *Urol Oncol.* 2020;38(3):105-117.
32. Golfiroozi S, Sheikhejad F, Kabusi M, Esmaelpour H, Latifi N, Ranjbar Noei F. The Effect of Training on Learning Cardiopulmonary Resuscitation Skills in Emergency Nurses. *Int J Med Invest.* 2022;11(4):122-128.
33. Kabusi M, Golfiroozi S, Rajabloo M, Yahyanezhad M, Hojjati H. The Effect Of Neonatal Cardiopulmonary Resuscitation Training On The Knowledge Of Neonatal Ward Nurses. *Int J Med Invest.* 2023;12(3):190-196.
34. Siah Mansour Z, Firoozi F, Safari M, Shojaei B, Bagheri N, Maghsoodloo E. Investigating The Relationship Between Ability And Adherence To Medication Regimen Among Elderly Patients With Diabetes. *Int J Med Invest.* 2023;12(3):133-141.
35. Roozbehani R, Fatemi AA, Zamani Z, Khedri B, Arefkia K, Kabusi M, et al. Impact of Short Message System Education on Blood Sugar Control and Treatment Adherence in Patients With Type 2 Diabetes. *Iran Rehab J.* 2022;20(4):549-560.

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