Volume 6, July/December 2025, Issue 2, pp. 142-152

Interdisciplinary Journal of Acute Care

Journal homepage: ijac.lums.ac.ir

Online ISSN: 3060-7159

The Impact of Nursing Navigation Program on Treatment Adherence of Elderly Patients with Chronic Obstructive Pulmonary Disease (COPD)

Sahand Shahbazi[1], Shahin Salarvand[2*], Zeynab Khodayari[3], Elham Goudarzi[4]

[1] Student Research Committee, School of Nursing and Midwifery, Lorestan University of Medical Sciences, Khorramabad, Iran
[2] Hepatitis Research Center, School of Nursing and Midwifery, Lorestan University of Medical Sciences, Khorramabad, Iran
[3] Social Determinants of Health Research Center, School of Nursing and Midwifery, Lorestan University of Medical Sciences, Khorramabad, Iran
[4] Social Determinants of Health Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran

ARTICLE INFO

Article Type:

Research Article

Article History:

Received
11 October 2025

Received in revised form
06 November 2025

Accepted
29 November 2025

Available online
31 November 2025

ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is one of the most prevalent chronic diseases, especially among the elderly. Given the importance of treatment adherence in this population, it is essential to implement interventions, such as a nursing navigation program. This type of intervention has received little attention compared to other educational interventions, and there are no results to support or refute its use. The present study was developed and implemented to examine the effect of a nursing navigation program on treatment adherence in elderly patients with COPD. This study, a parallel randomized controlled trial, was conducted in 2025 Khorramabad city, Iran on 48 COPD-suffering aged individuals assigned to experimental and control groups using a stratified random block design. The interventions included two steps and six sessions (three in-person sessions in the hospital and three post-charge phone-based sessions) delivered over 1 month. Data were collected using the standard Treatment Adherence Questionnaire, which was completed by the experimental and control groups before, immediately after, and one month after the intervention. In the intervention group, the total mean score for treatment adherence was 64.20 (9.87) before, 109.50 (16.83) immediately, and 92.58 (12.50) one month after the intervention. In the control group, the mean score for treatment adherence was 60.16 (8.29) before the navigation nursing interventions, 59.54 (5.46) immediately after, and 61.12 (10.13) one month after the intervention. The results demonstrated the effectiveness of the nursing navigation program on treatment adherence in the experimental group. Therefore, the results offer a novel perspective for supporting elderly patients.

Keywords: Chronic obstructive pulmonary disease (COPD); Elderly patients; Nursing navigation program (NNP); Treatment adherence

Publisher:
Lorestan University of Medical Sciences

Cite this article: Shahbazi S, Salarvand S, Khodayari Z, Goudarzi E. The Impact of nursing navigation program on treatment adherence of elderly patients with chronic obstructive pulmonary disease (COPD). *Interdisciplinary Journal of Acute Care.2025; 6*(2): 142-152. https://doi.org/10.22087/ijac.2025.552705.1071

* Corresponding author: Shahin Salarvand. Hepatitis Research Center, School of Nursing and Midwifery, Lorestan University of Medical Sciences, Khorramabad, Iran. email: salarvand60@gmail.com

DOI: 10.22087/ijac.2025.552705.1071

Introduction

Given the increasing growth of the elderly population worldwide, including in Iran [1-3], it is necessary to pay attention and plan to meet the requirements and promote the quality of life of the elderly [4-5], because the aged are more vulnerable to physical and psychological harm than other age groups [6-8]. One of the diseases under consideration in old age is chronic obstructive pulmonary disease (COPD) [9], which is not age-related but has gained special importance in this group because older adults are among the high-risk groups exposed to this malady [10]. The prevalence of COPD in the elderly population varies, accounting for 3.23 million deaths in 2019. The global prevalence of COPD is 15.70% in men and 9.93% in women [11]. In Iran, this disease affects 11.9% of men, 8.8% of women, and 10% of the overall population [12]. COPD has complications such as activity intolerance, mental disorders, social isolation, and sleep disorders [13]. Therefore, controlling this disease in older adults is vital. One approach to controlling this malady is drug therapy (known as systemic therapy), and one of the principles of drug therapy is patient adherence to the doctor's treatment recommendations, which results in reduced disease complications and costs [14].

In contrast to treatment adherence, non-adherence is a complex behavioral process influenced by several factors, including patients' individual characteristics, the doctor-patient relationship, and the healthcare system [15]. The prevalence of non-adherence to COPD in the elderly has been reported differently. In the elderly, it was reported as 32.9% in South America [16], 24.6% in Spain [17], 76% in Canada [18], and less than 60% in some other regions [19]. It is essential to identify the factors influencing the rate of treatment non-adherence in the elderly. Several factors have been identified. Some of the individual factors include age, gender, education, employment, marital status, and literacy level [20]; some are demographic, while others are social and economic [21]. Given the central role of the elderly in Iranian families and the importance of treatment adherence to reduce the burden of COPD, it is necessary to promote this component among senior citizens. One method of promoting treatment adherence is the use of training interventions, including individual education [21]. In some studies, the use of health interventions in treatment adherence in various diseases has been mentioned and the necessity behind interventions has been stressed among the public; Ammous et al. (2024), [22], Jiang et al. [23], Başoğlu et al [24] and Liu et al. [25] emphasized running educational interventions to boost treatment adherence in various chronic diseases. One of the care programs currently being focused on in Iran is the nursing navigation program (NNP), which primarily aims to provide patient-centered care with timely access to care. In this approach, nurse navigators play a fundamental role in the care and lives of patients and their families [26]. Nurse navigators are nurses with at least a 2-year nursing degree who support patients, communicate their needs to healthcare professionals, and manage their care. This role has primarily evolved to help oncology patients and their families navigate the complexities of cancer treatment [26]. The role of nurse navigators is embodied in the philosophy of primary health care (PHC), in which nurses work in partnership with individuals, families, and communities to enable access to the type and level of service and support they need for optimal health outcomes. Nurse navigators have the clinical expertise to provide individualized assistance and education to patients, family members, and caregivers in the healthcare setting, and their roles include prevention, screening, diagnosis, treatment, and survival [27].

Some nurse navigators work mainly in general practice offices. In contrast, others work in settings such as hospitals, where patients require community or long-term health services. In both cases, all nurse navigators shared a commitment to public health and used their knowledge and skills to make a significant contribution to health promotion [27]. Some navigator roles are specific to nursing and require clinical knowledge of a nurse. For example, some nurse navigators in Canada are nurses whose role is to help fill service gaps for cancer patients. Such nurses provide patients with disease-specific information and practical tips, emotional support, facilitate decision-making, create links to resources, and help identify and develop community support [27]. Nurse navigation programs have been effectively employed for some diseases, such as cancer screening [28], Parkinson's disease [29], and chronic diseases [30]. However, few studies have examined the use of this program to improve treatment adherence among the elderly, and none have examined chronic obstructive pulmonary disease (COPD) and the use of nurse navigators. At the same time, older adults with this disease require follow-up, which could be a gap between the nursing navigation program, relevant studies, and this study.

Materials and Methods

Study Design and Participants

The present research, a parallel randomized controlled trial (parallel RCT), aimed to examine the effect of a nursing navigation program (NNP) on treatment adherence among elderly patients with COPD. The study's statistical population consisted of

all individuals with COPD who were referred to Shahid Rahimi and Shohaday-e-Ashayer public hospitals in 2025. The statistical sample included patients who met the study inclusion criteria: a patient just being diagnosed with the disease, the COPD diagnosis being indeed confirmed by a specialist, the age group of 60 years and older, referral to Shahid Rahimi and Shohaday-e- Ashayer public hospitals, having a minimum level of literacy, and willingness to participate in the study. The exclusion criteria included missing more than two training sessions, the patient being under similar training and intervention, the outbreak of an acute or any other new illness during the study, and patient death.

Sample Size and Sampling Procedure

In each study arm, considering Effect size: 0.25; α=0.05; 1-β=0.84; Corr among rep measurement: 0. 5; Number of groups: 2, and pursuant to the results of the study by Alanazi et al. [31], the sample size was estimated as 24 individuals per group. The total sample size was 48. The sample was obtained from two public hospitals.

Data Collection Tool

A questionnaire containing two sections on demographic characteristics and Modanloo's Treatment Adherence Questionnaire was used to collect data.

Demographics characteristics: This form included demographic information, including sex, age, marital status, education, economic status, the main source of income, who they live with, the level of support, presence in social activities, the duration of illness, surgical history, the family background of illness, and previous death experience.

Treatment Adherence Questionnaire: This questionnaire for chronic diseases was designed and psychometrically validated by Modanloo [32]. This 40-item questionnaire consists of seven domains: treatment commitment (9 items), willingness to participate in treatment (7 items), ability to adapt to survival treatment (7 items), integration of survival treatment (5 items), treatment adherence (4 items), commitment to treatment (5 items), and measures in treatment implementation (3 items). The measurement scale in this questionnaire is a 6-point Likert scale, from Absolutely (score 5) to Not at all (score 0). The scoring of several statements was reversed: not at all was scored as 5, and absolutely was scored as 0. Statements 33, 34, 35, 37, 38, 39, and 40 are scored in a reversed manner. Thus, the max and min scores for each component can be calculated. The order of scoring the statements was positive; that is, the greater the degree of desirability of the characteristics, the higher the score. Thus, the higher the total score or the score of each component, the higher was the respondent's adherence. The questionnaire's content validity was 0.914, and its reliability was 0.92, according to Fatemi et al., the Cronbach's alpha coefficient of this questionnaire was 0.912 [33].

Educational Intervention

To conduct this research in the pre-intervention stage, the researcher was introduced, the research objectives were stated, participants were informed of their participation, and written informed consent was obtained from them. Based on the inclusion criteria, elderly patients with COPD were selected.

The questionnaires were then completed on paper in both the intervention and control groups (in the hospital, before discharge, by the researcher). Subsequently, based on randomization, the patients were assigned to the intervention and control groups. The training sessions for the intervention group were developed in two steps: the first step involved providing educational content in the hospital before discharge, and the second step involved providing nursing interventions and educational content at home after discharge (the interventions were designed only for the intervention group, and the control group received routine care upon discharge, and the intervention was not held for them)(see Table 1 for intervention content and process).

The educational intervention was designed based on a review of various references [36, 34, 35] and was approved by faculty members, including two guides and an advisor, a pulmonologist, and an internal medicine specialist. The educational intervention was conducted in-person and personalized in the hospital (three sessions of in-person intervention before discharge), and the nursing navigation intervention was conducted by phone for a month (from discharge until one month, three phone calls were held (one was held every week, making three weeks overall). After the intervention was implemented and 1 month after it was terminated, the treatment adherence questionnaire was recompleted in both the intervention and control groups (the questionnaire was completed in the fourth week). To complete the post-test questionnaires, both groups were required to visit the hospital on a certain day and complete the pertinent questionnaires. Eventually, the pre-and post-study information was statistically analyzed.

Data Collection Procedure

Once the required permits were obtained from Khorramabad University of Medical Sciences, the researcher visited Shahid Rahimi and Shohaday-e-Ashayer hospitals to collect data. After written informed consent was obtained, pre-test questionnaires were administered to the patients. The information was provided upon completing the questionnaire: the study purpose and quitting conditions. In addition, the participants were allowed

time to complete the questionnaire, and a week later, the researcher collected the questionnaires. After the intervention group was assigned and the educational interventions were implemented, post-test questionnaires (administered immediately and 1 month after the intervention) were collected from both groups.

Data Analysis

SPSS 27 was used for data analysis. Initially, the Kolmogorov-Smirnov normality test was conducted. After data collection, descriptive statistics, including the mean and standard deviation, were applied to the quantitative variables, and frequency and percentages were used for the qualitative variables. Given the study design, which included two groups (intervention and control) and repeated measures at three time points (before, 14, and 1 month after the intervention), repeated-measures ANOVA and the Friedman nonparametric test were employed to analyze the data. For intergroup comparisons, the Mann–Whitney U test was used. The significance level was set at 0.05 for all tests.

Table 1. Nurse Navigation Intervention

Intervention type	No. of sessions	Session content	procedure	Training duration
Educational intervention	3	First session: A review of the training purpose and then identifying the problem of expressing patients' feelings, opinions, and thoughts about COPD, and creating susceptibility Second session: Understanding the disease nature (symptoms, course, its chronic nature, the individual's need for a preventive treatment approach); COPD complications such as dyspnea, sleep disturbance, impaired physical activities and daily activities, providing general information about treatment options for prevention in patients recently being diagnosed with COPD, which led to perceiving the threat. Third session: Training the concept as treatment adherence, explaining medicinal options and the reason for taking the drug, the potential benefits as well as the potential risks or safety aspects and side effects (short- and long-term); Explaining the results of the effectiveness of each treatment option; Briefly weighing up the pros & cons of drug options, specifying the names of the taken drugs, asking the patient to name their medications, telling the nurse the exact time of administering the medication to patient, and asking the patient to state at what time each drug should be taken.	Researcher lecture, give & take discussion	30 minutes per training
Nursing navigation program (NNP)	3 phone calls	First call: Given the nurse-centered nature of the training; getting familiar with the nurse navigator's care and the follow-up by nurses; Explaining medication options and the reason for taking the medication, the potential benefits & risks or safety aspects and side effects (short-and long-term); Describing the results of the effectiveness of each treatment option; Briefly weighing up the pros & cons of the medication options; Giving the patient a list of pre-prepared questions (questions the patient should ask the doctor and the space for writing comments or notes and additional questions); Homework to help patients or families weigh the pros & cons of the medication-based treatment options);Ask patients to share their medication treatment questions and preferences with their nurse. Reminding specialized referrals, doctor appointments, medication-based treatments, consulting if required, and taking medications on time. Second call: Education related to medication-based treatments, explanation on taking drugs; briefly weighing up the pros & cons of treatment adherence; asking patients to share questions and treatment preferences with their nurse. Guidance and referral to specialists and diagnostic treatment centers if necessary. Emotional support, fostering empathy and compassion for the patient and their family, motivating them to pursue the desired course of treatment, and reminding them of specialized referrals, doctor appointments, medication-based treatments, consultations if required, and taking medications on time. Third call: Consultation, reminding specialized referrals, treatment adherence, follow-up of medical appointments, ward visit/readmission, and, finally, requesting a referral to complete the questionnaire.	Researcher lecture, give & take discussion	10 minutes per call

Results

As the results indicated, in the intervention group, 54.2% were female. According to the Chi-squared test, the two groups were homogeneous with respect to sex. In the intervention group, 62.5%, and in the control group, 70.8% were married. In the intervention and control groups, 66.7% and 45.8% participants were illiterate, respectively. The results of the chi-squared test showed that the two groups were homogeneous with respect to sex, marital status, education, occupation, and economic status.

The mean age of the patients in the intervention group was 65.69±5.32 years, and that of the control group was 64.58±4.56 years. According to the Mann-Whitney test, there was no significant difference in the mean age between the two groups (Table 2).

The results showed that 62.5 % and 70.8 % subjects in the intervention and control groups, respectively, had a history of surgery. According to the chi-squared test, the two groups were homogeneous with respect to their surgical history. Most participants in the intervention (58.3%) and control (66.7 %) groups had a history of illness. The results of the chi-squared test showed that the two groups were homogeneous regarding history of surgery, history of illness, experience of death, comorbidity, and number of hospitalizations. Additionally, no significant difference in the mean illness duration was observed between the two groups. (Table 3).

Initially, the normality of the variables for the treatment adherence components and the total treatment adherence score was examined using the Kolmogorov-Smirnov test in both groups. Subsequently, for intergroup comparisons, an independent t-test was used for normal distributions, and a Mann-Whitney U test was used for non-normal distributions. As the distribution of the components was not normal, the Mann-Whitney U test was used for intergroup comparisons.

Table 4 compares the mean scores for the components of treatment adherence and the total treatment adherence score in the intervention and control groups before the intervention, at 14 days, and 1 month after the intervention. The pre-educational intervention revealed no significant difference between the two groups in terms of the components. In contrast, immediately after and 1-month post-intervention, significant differences were observed between the intervention and control groups in treatment adherence components and the total treatment adherence score (P<0.001).

In the intervention group, the mean scores for treatment adherence components and the total treatment adherence score were significantly different at 1 month and 14 days after the intervention compared with the pre-intervention scores, indicating that the intervention affected treatment adherence and its components (P < 0.001). (Table 5)

In the control group, no statistically significant differences were observed in the components as treatment-related efforts, willingness for treatment, and the total score of treatment adherence during the intervention. In contrast, the other components showed significant differences over time (p<0.05). (Table 6

Table 2. Demographic variables in two groups (intervention and control)

Variable		Control N (%)	Intervention N (%)	Statistic	p-value
Sex	Female	14(58.3)	13(54.2)	Chi2=0.85	0.50**
	Male	10(41.7)	11(45.8)		
Marital status	Married	17(70.8)	15(62.5)	Chi2=0.375	0.380**
	Others	7(29.2)	9(37.5)		
Education	Illiterate	11(45.8)	16(66.7)	Chi2=2.11	0.122**
	Elementary	13(54.2)	8(33.3)		
Occupation	Having a job	13(54.2)	12(50)	Chi2=1.131	0.937*
	Not having a job	11(45.8)	12(50)		
Economic status	Middle	12(50)	12(50)	Chi2=0.00	0.999
	Low	5(20.8)	5(20.8)		
Source of income	The aged person	14(58.3)	19(79.2)	Chi2=2.42	0.298*
	Children	8(33.3)	4(16.7)		
	Other ones	2(8.3)	1(4.2)		
with whom you live	Only with spouse	16(66.7)	14(58.3)	Chi2=0.356	0.383**
	With family (child)	8(33.3)	10(41.7)		
Support	Lack	20(83.3)	21(87.5)	Chi2=0.099	0.952**
	A little	4(16.7)	3(12.5)		
Social activity	Low	1(4.2)	1(4.2)	Chi2=0.	0.446*
	Middle	14(66.7)	15(62.5)		
	High	7(29.2)	8(33.3)		

Chi-squared test *, Fisher's test **

Table 3. Disease Characteristics (intervention and control)

Variable		Control (%)	Intervention (%)	Statistic	p-value
History of surgery	Yes	17(70.8)	15(62.5)	Chi2=0.375	0.380**
	No	7(29.2)	9(37.5)		
History of disease	Yes	16(66.7)	14(58.3)	Chi2=0.356	0.383**
	No	8(33.3)	10(41.7)		
Experience of death	Yes	3(12.5)	6(25)	Chi2=1.23	0.231**
	No	21(87.5)	18(75)		
Comorbidity	Yes	12(50)	10(41.7)	Chi2=0.356	0.383**
	No	12(50)	14(58.3)		
Number of hospital stays	Once	4(16.7)	4(16.7)	Chi2=0.801	0.849*
	Twice	11(45.8)	12(50)		
	3 times	9(37.5)	8(33.3)		
Disease duration (year) (Mean±SD)		3.62±0.87	3.16±0.70	t=-2.10	0.501***

Chi-squared test **; Fisher's test *; Mann-Whitney test ***

Table 4. Comparison of changes in treatment adherence and its components during the study periods in two groups

Variable	Groups	Mean rank of pre-intervention	Mean rank 14 days after intervention	Mean rank one month after intervention
Treatment-related efforts	Intervention	26.94	36	30.25
	Control	22.06	13	18.75
	p-value *	0.216	<0.001	0.004
Willingness for treatment	Intervention	26.54	36.48	33.02
	Control	22.46	12.52	15.98
	p-value *	0.304	<0.001	<0.001
Adapting to treatment	Intervention	26.56	36.50	36.50
	Control	22.44	12.50	12.50
	p-value *	0.293	<0.001	<0.001
Integration of treatment	Intervention	26.83	13.67	32.94
	Control	22.17	15.33	16.06
	p-value *	0.239	<0.001	<0.001
Treatment compliance	Intervention	27.44	36.50	36.50
	Control	21.56	12.50	12.50
	p-value *	0.126	<0.001	<0.001
Treatment commitment	Intervention	27.29	35.33	34.46
	Control	21.71	13.67	14.54
	p-value*	0.160	<0.001	<0.001
Treatment-related hesitation	Intervention	27.27	36.50	36.50
	Control	21.73	12.50	13.40
	p-value *	0.170	<0.001	0.001

Table 5. Comparison of changes in mean scores of treatment adherence and its components during the study periods in the intervention group

Variable	Before intervention	14 days after intervention	One month after the intervention	Intergroup p-value
	Mean (SD)	Mean (SD)	Mean (SD)	
Treatment-related efforts	14.41(2.76)	24.08(4.28)	20.79(2.46)	<0.001a
Willingness for treatment	11.08(1.52)	20(2.55)	14.87(2.62)	<0.001a
Adapting to treatment	11.33(1.76)	19.50(2.82)	18.70(2.49)	<0.001a
Integration of treatment	7.62(1.76)	12.75(3.05)	10.70(2.42)	<0.001a
Treatment compliance	6.95(0.80)	12.12(1.36)	9.79(0.88)	<0.001a
Treatment commitment	7.66(1.78)	12.91(2.74)	12.91(2.74)	<0.001a
Treatment-related hesitation	5.12(0.61)	8.12(1.54)	4.79(0.88)	<0.001a
Treatment adherence	64.20(9.87)	109.50(16.87)	92.58(12.50)	<0.001b

a-Friedman test; b-Repeated measures ANOVA

Table 6. Comparison of changes in mean scores of treatment adherence and its components during the study period in the control group

Variable	Before intervention	14 days after intervention	One month After intervention	Intergroup p-value
	Mean (SD)	Mean (SD)	Mean (SD)	
Treatment-related efforts	13.41(2.43)	13.91(2.26)	15.83(6.83)	0.522a
Willingness for treatment	10.62(1.52)	10.54(1.55)	11.37(1.71)	0.382b
Adapting to treatment	10.75(1.48)	9.50(2.10)	9.33(1.85)	<0.001a
Integration of treatment	7.04(1.60)	8.45(1.14)	7.62(1.24)	<0.005a
Treatment compliance	6.54(0.97)	4.83(1.65)	5.16(0.86)	<0.001a
Treatment commitment	6.95(1.65)	7(1.38)	8.16(1.16)	<0.010a
Treatment-related hesitation	4.83(0.86)	5.29(0.46)	3.62(1.24)	<0.001a
Treatment adherence	60.16(8.29)	59.54(5.46)	61.12(10.13)	<0.660 b

a-Friedman test; b-Repeated measures ANOVA

Discussion

The present study aimed to examine the effect of the nursing navigation program on treatment adherence in COPD among elderly patients at public hospitals in Khorramabad in 2025. The results indicated that the nursing navigation-focused intervention was effective in improving treatment adherence in the test group.

The results indicated that after the intervention, the treatment-related effort score in the intervention group was significantly higher than that in the control group. This finding is consistent with prior studies, including those by Zhang et al. [37], Manderson et al. [38], and Kinsley et al. [39]. These researchers highlighted the importance of involving nurses in educational interventions for older patients. These results indicate that a nurse-centered educational intervention, particularly for older individuals with chronic diseases, can empower patients to receive appropriate treatment.

According to the present research, the post-intervention score for participation in treatment increased significantly in the intervention group compared to the control group. Most prior studies found that positive interventions increased participation in treatment for various diseases in the intervention groups. For instance, prior studies, such as those by Dou et al. [40] and Counts et al. [41], reported a significant effect of educational interventions on treatment adherence, consistent with the current study's findings. In the nursing navigation-focused intervention, the nurse also serves as a partner for the patient participating in the treatment. When the patient is hospitalized, the nurse navigator administers medication; when the patient is at home, the nurse navigator participates in their treatment by visiting or contacting them.

The present study revealed that the post-intervention score for treatment compliance in the intervention group was significantly higher than that in the control group. The comparison of these two means indicates the impact of the educational intervention on treatment compliance in the intervention group and the mean increase in the intervention group. This finding is consistent with the results of previous studies, including those of Gonçalves et al. [42] and Trieu et al. [43]. Hiring nurses in nursing navigation programs means that elderly patients receive emotional and psychological support. Consider an older adult who is sick and may live alone; if they live with their spouse, they are also old and cannot pay special attention to them. In this intervention style, the nurse serves as a companion to help the elderly take their medication, emotionally support them, and boost their sense of support. Their cooperation in treatment is also enhanced.

According to the present study's findings, the post-intervention score for treatment integration significantly increased in the intervention group compared to the control group. This finding is consistent with the results of previous studies, including that of Shockney et al. on chronic diseases and complex care navigators [44]. The first issue that comes to mind is that COPD is not a complex disease, and the integration of treatment is easy. However, when an older adult suffers from multiple illnesses and has to take multiple types of medications, this disease gets complicated along with other diseases, and this is where the need to benefit from navigation interventions is felt as a warning. Volpato et al. [45] specifically surveyed care behaviors and, along with hiring a nurse navigator for patients, reported that self-care behaviors in patients were meaningfully enhanced, which is congruent with the findings of our study. In another study, Del Pulgar et al. emphasized hiring nurses to care for patients with chronic diseases as one of the most effective training interventions [46].

The results of the present study showed that pre-intervention did not differ significantly between the intervention and control groups in terms of adherence compliance. The post-intervention score of adherence compliance in the intervention group significantly increased compared to that of the control group, which is parallel with the results of the preceding studies, including the research by Pavlovsky et al. [47], Wang et al. [48], and Flucke et al. [49]. The question raised here is how having a nurse can effectively enhance behaviors such as treatment adherence. In answering this question, it is worth noting that this is natural, as the nurse navigator's duties include introducing the patient, explaining the patient's condition and medical history, conducting a nurse assessment, and presenting the required tips. This method helps improve patient safety, increases mutual understanding among medical staff, enhances service quality, and assists patients in adhering to treatment plans.

The present study's results showed that the pre-intervention did not result in any significant differences between the intervention and control groups regarding treatment commitment, and the post-intervention revealed that the score of the treatment commitment in the intervention group increased remarkably compared to that of the control group, being in line with the results of prior studies [50-53]. To interpret this finding, it is worth noting that the nurse navigator's reminders made patients feel more committed to their treatment. The patients recalled this issue during conversations with the research nurse. They stated that when their nurse asked them to be committed to taking their medication correctly, they felt that they should take their medication on time and be committed to taking it.

The results indicated that the post-intervention score for treatment-related hesitation in the intervention group increased significantly compared to that in the control group, and the mean score for treatment-related hesitation increased as expected. During the nursing navigation program, the training made patients aware of the threat, and given that the training was nurse-centered, patients were motivated to prevent complications and seek solutions. This finding is consistent with those of similar studies, such as those by Sun et al. [54], Kokorelais et al., and Berezowska et al. [55, 56].

As grasped by the results of this study, the post-intervention score of treatment adherence in the intervention group meaningfully increased compared to that of the control group, which was in agreement with the results of previously performed studies, including those conducted by Fischer et al. [57], Oh et al. [58], Foppa et al. [59], Pratt-Chapman et al. [60], Jiang et al. [61], and Bidstrup et al. [62]. Finally, the findings of the current study and similar findings from other studies support the benefits of the nursing navigation program (NNP).

Limitations

The study limitations were the participants' self-reporting, and due to the presence of the researcher when completing the questionnaire, it was probable that the respondent did not answer the questions accurately, which could lead to incorrectly estimating the rate of treatment adherence among the study participants and the short follow-up period of the study. Therefore, longer intervention studies should be conducted in future research. Another limitation of the study was that the researcher struggled to review the literature and explain his findings, as few studies have been conducted on the nursing navigation program for diseases, especially chronic pulmonary diseases. Another limitation was the inability to generalize the project's results to other locations because of cultural differences and prevailing geographic conditions. Thus, it is recommended to develop and implement this project in other provinces (the findings of the present study may be applied to promote treatment adherence among the Loro-speaking ethnic groups, given their shared culture and behavioral patterns).

Conclusion

The results demonstrated the effectiveness of the NNP on treatment adherence in the experimental group. Although applying nursing navigation intervention was a novel topic, it tangibly promoted treatment adherence even 1 month after the intervention, and this largely depended on the type of intervention and nurses maintaining phone contact with patients. Therefore, the results offer a novel perspective for supporting elderly patients. Since COPD in the elderly has not been much focused on, and in particular, the NNP was also a new topic in this disease, we would appreciate it if other researchers would propose a new protocol for elderly care by implementing such an intervention.

Authorship contribution statement

All authors have reviewed and approved the final version of the manuscript. Sh S conceived and designed the study. S Sh conducted the study and

collected the data; ZK and EG performed the data analysis and interpretation.

Ethical Consideration

This project was approved by the Research Council of Lorestan University of Medical Sciences s (code: IR.LUMS.REC.1404.039), and Iranian Registry of Clinical Trials (code. IRCT20250316065095N1).

Declaration of Competing Interest

The authors have no conflict of interests related to this article.

Acknowledgments

The current paper is based on a student thesis from the Faculty of Nursing and Midwifery, Khorramabad University of Medical Sciences. The author appreciates the Deputy of Research at Lorestan University of Medical Sciences, all COPD-suffering elderly patients who are referred to Shohaday-e-Ashayer and Shahid Rahimi hospitals, and the hospital colleagues who are cooperating in this project.

Funding

This study did not receive any external funding.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request

Declaration of Generative AI

The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript, nor for the creation of tables, or their corresponding captions.

References

1. Lemoine M. Defining aging. Biology & Philosophy. 2020 Oct;35(5):46.

2. United Nations. World Population Ageing 2019. New York: United Nations; 2019.

3. Alineghad M, Matlabi H. Description and Analysis of Health Promoting Behaviors among older people: Assessing Healthy Lifestyle. Journal of Geriatric Nursing. 2018 Dec 10;5(1):63-72.

4. Safdari R, Shams Abadi AR, Pahlevany Nejad S. Improve health of the elderly people with M-health and technology. Iranian Journal of Ageing. 2018 Oct 10;13(3):288-99.

5. Sarani H, Aghaei N, Saffari M, Akbari Yazdi H. Strategies for Promoting Elders' Health with Sporting Activities: A Qualitative Study. Iranian Journal of Health Education and Health Promotion. 2019; 6 (4):325-339.

6. Mohaqeqi Kamal SH, Basakha M. Prevalence of chronic diseases among the older adults in Iran: Does socioeconomic status matter?. Iranian Journal of Ageing. 2022 Feb 10;16(4):468-81.

7. Luo MS, Chui EWT, Li LW. The Longitudinal Associations between Physical Health and Mental Health among Older Adults. Aging & Mental Health. 2020 Dec;24(12):1990-1998. https://doi.org/10.1080/13607863.2019.1655706

8. Mehri N, Messkoub M, Kunkel S. Trends, determinants and the implications of population aging in Iran. Ageing International. 2020 Dec;45(4):327-43.

9. Mollica M, Aronne L, Paoli G, Flora M, Mazzeo G, Tartaglione S, Polito R, Tranfa C, Ceparano M, Komici K, Mazzarella G. Elderly with COPD: Comoborbitidies and systemic consequences. Journal of Gerontology and Geriatrics. 2021;69:32-44.

10. Varmaghani M, Dehghani M, Heidari E, Sharifi F, Moghaddam SS, Farzadfar F. Global prevalence of chronic obstructive pulmonary disease: systematic review and meta-analysis. Eastern Mediterranean Health Journal. 2019 Mar 19;25(1):47-57. https://doi.org/10.26719/emhj.18.014

11. Sharifi H, Masjedi MR, Emami H, Ghanei M, Eslaminejad A, Radmand G, Buist AS. Interim Report from Burden of Obstructive Lung Disease (BOLD Study) in Tehran: Prevalence and Risk Factors of Chronic Obstructive Pulmonary Disease. Tanaffos. 2014;13(3):6-13.

12. Bastani F, Farajtabar F. Assessment of insomnia severity in elderly patients with chronic obstructive pulmonary disease in Rasoul Akram Hospital, 2019 Tehran. Journal of Ardabil University of Medical Sciences. 2020 Apr 10;20(1):20-31.

13. Hu W, Li T, Cao S, Gu Y, Chen L. [Retracted] Influence of Nurse-Led Health Education on Self-Management Ability, Satisfaction, and Compliance of Elderly Patients with Chronic Obstructive Pulmonary Disease Based on Knowledge, Belief, and Practice Model. Computational and Mathematical Methods in Medicine. 2022;2022(1):1782955.

14. Bhattarai B, Walpola R, Mey A, Anoopkumar-Dukie S, Khan S. Barriers and Strategies for Improving Medication Adherence Among People Living With COPD: A Systematic Review. Respiratory Care . 2020 Nov;65(11):1738-1750. https://doi.org/10.4187/respcare.07355

15. Izquierdo-Condoy JS, Gualpa Álvarez F, Morales-Lapo E, Arias Calvache WD, Bermúdez Moreira J, Quinga-Chiguano KM, Ortiz-Prado E. Adherence to Inhalation Therapy Among COPD Patients: A Cross-Sectional Study in a Tertiary Hospital in Quito, Ecuador. International Journal of Chronic Obstructive Pulmonary. 2025 Feb 21;20:399-410. https://doi.org/10.2147/COPD.S493992

16. Murillo ER, Mora JRM, Bachiller MM, Santiago LG, Braqué NN, Bravo MO. Factors associated with low adherence to inhaled therapy in patients with chronic respiratory diseases: a cross-sectional study. BMC Pulm Med. 2025 Feb 27;25(1):94. https://doi.org/10.1186/s12890-025-03563-7

17. Weir DL, Bai YQ, Thavorn K, Guilcher S, Kanji S, Mulpuru S, Wodchis W. Non-adherence to COPD medications and its association with adverse events: A longitudinal population based cohort study of older adults. Annals of Epidemiology. 2024 Aug;96:88-96. https://doi.org/10.1016/j.annepidem.2023.12.003

18. Trieu NTT, Upvall M, Hoai NTY, Thuy PT, Long TV, Phuong NTA. The Effect of Treatment Adherence on Health

Status of Outpatients with Chronic Obstructive Pulmonary Disease. Home Healthc Now. 2024 Sep-Oct 01;42(5):260-266. https://doi.org/10.1097/NHH.0000000000001289

19. Gow K, Rashidi A, Whithead L. Factors Influencing Medication Adherence Among Adults Living with Diabetes and Comorbidities: a Qualitative Systematic Review. Current Diabetes Reports. 2024 Feb;24(2):19-25. https://doi.org/10.1007/s11892-023-01532-0

20. Ekenberg M, Qvarnström M, Sundström A, Martinell M, Wettermark B. Socioeconomic factors associated with poor medication adherence in patients with type 2 diabetes. European Journal of Clinical Pharmacology. 2024 Jan;80(1):53-63. https://doi.org/10.1007/s00228-023-03571-8

21. Khosravi A, Ravari A, Mirzaei T, Gholamrezapour M. Effects of a Comprehensive Care Program on the Readmission Rate and Adherence to Treatment in Elderly Patients with Chronic Obstructive Pulmonary Disease. Tanaffos. 2020 Dec;19(4):401-412.

22. Ammous O, Kampo R, Wollsching-Strobel M, Zimmermann M, Andreas S, Friede T, Kroppen D, Stanzel S, Salem S, Windisch W, Mathes T. Adherence-enhancing interventions for pharmacological and oxygen therapy in patients with COPD: a systematic review and component network meta-analyses. European Respiratory Review. 2024 Sep 4;33(173):240011. https://doi.org/10.1183/16000617.0011-2024

23. Jiang Y, Nuerdawulieti B, Chen Z, Guo J, Sun P, Chen M, Li J. Effectiveness of patient decision aid supported shared decision-making intervention in in-person and virtual hybrid pulmonary rehabilitation in older adults with chronic obstructive pulmonary disease: A pilot randomized controlled trial. Journal of Telemedicine and Telecare. 2024 Dec;30(10):1532-1542. https://doi.org/10.1177/1357633X23115663

24. Başoğlu S, Polat Ü. The Effect of Education and Monitoring via Tele-Nursing to Elderly Cancer Patients Using Oral Anticancer Agents on Self-efficacy and Medication Adherence: A Randomized Controlled Trial. Seminars in Oncology Nursing. 2024 Oct;40(5):151692. https://doi.org/10.1016/j.soncn.2024.151692

25. Liu YR, Wang Y, Peng X, Xie H. The Impact of Illness Perception on Medication Adherence to Inhaler Therapy in Elderly Individuals With COPD. Respiratory Care. 2024 Sep 24:respcare.12056. https://doi.org/10.4187/respcare.12056

26. Emfield Rowett K, Christensen D. Oncology Nurse Navigation: Expansion of the Navigator Role Through Telehealth. Clinical Journal of Oncology Nursing. 2020 Jun 1;24(3):24-31. https://doi.org/10.1188/20.CJON.S1.24-31

27. McMurray A, Cooper H. The nurse navigator: an evolving model of care. Collegian. 2017 Apr 1;24(2):205-12.

28. Matthew Ortiz MS. IMPLEMENTATION OF A CHECKLIST FOR ONCOLOGY NURSE NAVIGATION. InOncology Nursing Forum 2024 Mar 1 (Vol. 51, No. 2, pp. 79C-80C). Oncology Nursing Society.

29. De Santiago S, Nunez D. Impact of Nurse Navigation on Parkinson's Disease Community Wellness.

30. Negron SL. A Clinical Nurse Leader Nurse Navigator Program for Heart Failure Patients.

31. Alanazi, M.O.E., Alanazi, T.O.E., Alanazi, S.A.M., Alhamid, F.A., Alharthi, S.M.F., Alhamdi, M.T.M., Binzaid, J.S.A., Alamri, N.H.A., Alanazi, F.R., Alshaiqi, S.A.R. and Alhmied, S.A.S., 2024. A Qualitative Exploration of the Impact of Nurse-Guided Telehealth on Health Outcomes and Resource Use in Older Adults with Chronic Diseases in Hafr Albatin. Journal of International Crisis and Risk Communication Research, 7(S11), p.1036.

32. Modanloo M. Development and psychometric tools adherence of treatment in patients with chronic (dissertation). Tehran: Iran University of Medical Sciences; 2013

33. Fatemi NS, Rafii F, Hajizadeh E, Modanloo M. Psychometric properties of the adherence questionnaire in patients with chronic disease: A mix method study. Koomesh. 2018 Oct 4;20(2):179-91.

34. Bidstrup PE, Johansen C, Kroman N, Belmonte F, Duriaud H, Dalton SO, Andersen KG, Mertz B. Effect of a Nurse Navigation Intervention on Mental Symptoms in Patients With Psychological Vulnerability and Breast Cancer: The REBECCA Randomized Clinical Trial. JAMA network open. 2023 Jun 1;6(6):e2319591. https://doi.org/10.1001/jamanetworkopen.2023.19591

35. Wang R, Zhou C, Wu Y, Sun M, Yang L, Ye X, Zhang M. Patient empowerment and self-management behaviour of chronic disease patients: A moderated mediation model of self-efficacy and health locus of control. Journal of Advanced Nursing. 2022 Apr;78(4):1055-1065. https://doi.org/10.1111/jan.15077

36. Maheshwari P, Bobb A, Stuart A, Dalessio S, Bernasko N, Tinsley A, Clarke K, Coates MD, Williams E. Impact of a nurse navigator on a dedicated inflammatory bowel disease-focused gastroenterology clinic. Annals of Gastroenterology. 2021 Sep-Oct;34(5):675-679. https://doi.org/10.20524/aog.2021.0627

37. Zhang M. Effects of Continuous Nursing Intervention Combined with Breathing Training Guidance on Improving the Rehabilitation Effect and Self-care Ability of Elderly Patients with COPD. Alternative Therapies In Health And Medicine .2024 Dec;30(12):242-248.

38. Manderson B, McMurray J, Piraino E, Stolee P. Navigation roles support chronically ill older adults through healthcare transitions: a systematic review of the literature. Health & Social Care in the Community. 2012 Mar;20(2):113-27. https://doi.org/10.1111/j.1365-2524.2011.01032.x

39. Knisely M, Prvu-Bettger J, Strouse JJ, Tanabe P. Improving the Quality of Whole-Person Healthcare Delivery: Critical Components of a Sickle Cell Disease Nurse Navigator Role. Professional Case Management. 2025 Nov-Dec 01;30(6):251-260. https://doi.org/10.1097/NCM.0000000000000806

40. Dou Y, Zhang L, Wang Y, Xu X, Wu B. Effectiveness of nursing care intervention on the management of patients with chronic obstructive pulmonary disease: A systematic review and meta-analysis of randomized controlled trials. Advances in Clinical and Experimental Medicine. 2025 May;34(5):693-708. https://doi.org/10.17219/acem/189880

41. Counts KD. A Pilot Randomized Controlled Trial of a Palliative Care Education Intervention Compared to Usual Care on Health Literacy and Quality of Life Among Older Adults With Chronic Obstructive Pulmonary Disease: The Paced Study. University of Missouri-Kansas City; 2024.

42. Gonçalves TM, da Conceição Farinha M, Marques-Vieira C, Ferreira MA, Paiva MA, do Céu Neves M. Nursing Intervention in the Therapeutic Adherence of the Elderly With Chronic Disease: A Scoping Review. Global Perspectives on Health Assessments for an Aging Population. 2023:157-69.

43. Trieu NTT, Hoai NTY, Tung NN, Thong TH, Hien NTT. Effect of health education intervention on treatment adherence and health status in patients with Chronic obstruction pulmonary disease: A random control trial. PLoS One. 2025 Jun 24;20(6):e0325192. https://doi.org/10.1371/journal.pone.0325192

44. Shockney LD. Chronic disease and complex care navigators: a scoping review.

45. Volpato E, Poletti V. Navigating the Behavioral and Psychological Dimensions of Chronic Obstructive Pulmonary Disease (COPD). InHandbook of the Behavior and Psychology of Disease 2024 Sep 26 (pp. 1-25). Cham: Springer International Publishing.

46. Gomez Del Pulgar M, Cuevas-Budhart MA, Hernández-Iglesias S, Kappes M, Riquelme Contreras VA, Rodriguez-Lopez E, De Almeida Souza AM, Gonzalez Jurado MA, Crespo Cañizares A. Best Nursing Intervention Practices to Prevent Non-Communicable Disease: A Systematic Review. Public Health Reviews. 2022 Sep 14;43:1604429. https://doi.org/10.3389/phrs.2022.1604429

47. Pavlovsky E. Evaluation of a Nursing-Led Telephonic Self-Management Program for Patients with COPD on Health Care Utilization (Doctoral dissertation, Yale University).

48. Wang Q, Tang H, Zhang M. The clinical nursing effect of empowerment-based continuing nursing combined with pulmonary rehabilitation for chronic obstructive pulmonary disease. BMC Pulmonary Medicine. 2025 Jul 3;25(1):315. https://doi.org/10.1186/s12890-025-03683-0

49. Flucke N, Sullivan-Moore C. Patient Assessment: Using the Oncology Nurse Navigator Patient Assessment for Rural and Other Resource-Poor Settings. Clinical journal of oncology nursing. 2021 Dec 1;25(6):729-734. https://doi.org/10.1188/21.CJON.729-734

50. Huang X, Jiang Z, Dai Y, Liu Y, Dai Z, Wang J, Chen L, Wang Z, Wu W, Huang L. Effect of Gamification on Improved Adherence to Inhaled Medications in Chronic Obstructive Pulmonary Disease: Randomized Controlled Trial. Journal of Medical Internet Research. 2025 May 14;27:e65309. https://doi.org/10.2196/65309

51. Iyer AS, Wells RD, Bechthold AC, Armstrong M, O'Beirne R, Byun JY, Coffee-Dunning J, Odom JN, Buhr RG, Suen AO, Kotwal AA, Witt LJ, Brown CJ, Dransfield MT, Bakitas MA. Identifying priority challenges of older adults with COPD: A multiphase intervention refinement studyJournal of the American Geriatrics Society. 2024 Nov;72(11):3346-3359. https://doi.org/10.1111/jgs.19158

52. Louart S, Bonnet E, Ridde V. Is patient navigation a solution to the problem of "leaving no one behind"? A scoping review of evidence from low-income countries. Health Policy Plan. 2021 Mar 3;36(1):101-116. https://doi.org/10.1093/heapol/czaa093

53. Graboyes EM, Sterba KR, Li H, Warren GW, Alberg AJ, Calhoun EA, Nussenbaum B, McCay J, Marsh CH, Osazuwa-Peters N, Neskey DM, Kaczmar JM, Sharma AK, Harper J, Day TA, Hughes-Halbert C. Development and Evaluation of a Navigation-Based, Multilevel Intervention to Improve the Delivery of Timely, Guideline-Adherent Adjuvant Therapy for Patients With Head and Neck Cancer. JCO Oncology Practice. 2021 Oct;17(10):e1512-e1523. https://doi.org/10.1200/OP.20.00943

54. Sun X, Shen Y, Shen J. Respiration-related guidance and nursing can improve the respiratory function and living ability of elderly patients with chronic obstructive pulmonary disease. American Journal of Translational Research. 2021 May 15;13(5):4686-4695.

55. Kokorelias KM, Shiers-Hanley JE, Rios J, Knoepfli A, Hitzig SL. Factors Influencing the Implementation of Patient Navigation Programs for Adults with Complex Needs: A Scoping Review of the Literature. Health Services Insights. 2021 Jul 17;14:11786329211033267. https://doi.org/10.1177/11786329211033267

56. Berezowska A, Passchier E, Bleiker E. Professional patient navigation in a hospital setting: a randomized controlled trial. Supportive Care in Cancer. 2021 Apr;29(4):2111-2123. https://doi.org/10.1007/s00520-020-05721-5

57. Fischer SM, Min SJ, Kline DM, Lester K, Gozansky W, Schifeling C, Himberger J, Lopez J, Fink RM. Patient Navigator Intervention to Improve Palliative Care Outcomes for Hispanic Patients With Serious Noncancer Illness: A Randomized Clinical Trial. JAMA Internal Medicine.2024 Apr 1;184(4):384-393. https://doi.org/10.1001/jamainternmed.2023.8145

58. Oh J, Ahn S. Effects of Nurse Navigators During the Transition from Cancer Screening to the First Treatment Phase: A Systematic Review and Meta-analysis. Asian Nursing Research (Korean Soc Nurs Sci). 2021 Dec;15(5):291-302. https://doi.org/10.1016/j.anr.2021.10.001

59. Foppa L, Nemetz B, de Matos R, Schneiders J, Telo GH, Schaan BD. The impact of patient navigation on glycemic control, adherence to self-care and knowledge about diabetes: an intervention study. Diabetology & Metabolic Syndrome. 2023 Aug 17;15(1):172. https://doi.org/10.1186/s13098-023-01147-1

60. Pratt-Chapman ML, Silber R, Tang J, Le PTD. Implementation factors for patient navigation program success: a qualitative study.Implementation Science Communications.2021 Dec 20;2(1):141. https://doi.org/10.1186/s43058-021-00248-0

61. Jiang LG, Zhang Y, Greca E, Bodnar D, Gogia K, Wang Y, Peretz P, Steel PAD. Emergency Department Patient Navigator Program Demonstrates Reduction in Emergency Department Return Visits and Increase in Follow-up Appointment Adherence. The American Journal of Emergency Medicine. 2022 Mar;53:173-179. https://doi.org/10.1016/j.ajem.2022.01.009

62. Bidstrup PE, Johansen C, Kroman N, Belmonte F, Duriaud H, Dalton SO, Andersen KG, Mertz B. Effect of a Nurse Navigation Intervention on Mental Symptoms in Patients With Psychological Vulnerability and Breast Cancer: The REBECCA Randomized Clinical Trial. JAMA Network Open. 2023 Jun 1;6(6):e2319591. https://doi.org/10.1001/jamanetworkopen.2023.19591