



# The Evaluation of the Impact of Nursing Counseling Intervention on the Quality of Life of Patients with Heart Failure: Systematic Review

Stergiani Petaloti<sup>1\*</sup> and Anestis Kiosses<sup>2</sup>

<sup>1</sup>Intensive Care Unit, Serres General Hospital, Greece

<sup>2</sup>University of Piraeus, Greece

## Abstract

**Introduction:** Heart Failure (HF) is a chronic debilitating syndrome, which is associated with negative effects on both the physical/physical, mental, and socioeconomic dimension of patients suffering from it. This syndrome is associated with high morbidity and mortality and despite the introduction of new treatment protocols the prognosis continues and remains poor. Patients with the syndrome experience repeated hospitalizations, long-term re-hospitalizations, with symptoms and signs, which exhaust them and all of them, affect their Quality of Life (QOL). In recent years, special attention has been paid to the QOL with many studies internationally investigating and examining the effect of non-pharmacological interventions, managed by nurses on their improvement and their effect on the QOL of these patients.

The purpose of this Systematic Review (SR) was to evaluate the effect of counseling Intervention by health professionals Nurses on the care of patients with HF, by improving their self-care, through empowerment, with training programs on discharge from the hospital, in their transfer from the hospital to the home and then their follow-up at specific intervals.

**Material and Method:** Articles were searched in the Pubmed (Medline) databases and in the Google Scholar database. The matching of the keywords, the combination of the individual keywords used during the search in the databases was the following: ("Advisory intervention" OR "nursing advisory intervention" OR "nursing counseling" OR "nursing interventions" OR "nurse - led interventions" OR "counseling" OR "mutual goal setting" OR "goal setting" OR "supportive educational strategies" OR "supportive interventions" OR "supportive strategies" OR "educational interventions" OR "educational interventions" OR "educational strategies" OR "advice" OR "intervention") AND "quality of life" AND ("heart failure" OR "cardiac failure" OR "cardiac rehabilitation").

**Results:** The non-pharmacological management programs, managed by specialist nurses, with the counseling, educational intervention, help to identify disorders before the deregulation of the HF and the admission of the patient to the hospital, to strengthen him and his caregivers, but no correlation was observed between the improvements of health-related QOL.

**Conclusion:** There is complexity, diversity of these programs, both to determine the type of intervention by counseling/educational nursing, and the time, duration of the intervention, intensity, content of management programs, as well as the duration of follow up, but also in setting up the team of health professionals. Further studies are needed to evaluate the results of non-pharmacological management of patients with HF in health related to time, duration of follow-up, and establishment of the interdisciplinary team, intensity and content of management programs to document its effectiveness. Of these programs.

**Keywords:** Heart failure; Non-pharmacological management; Quality of life; Disease management programs; Nursing counseling

## Introduction

HF is a syndrome and not a disease, with an increasing prevalence and incidence as the population ages. It is the most rapidly growing cardiovascular condition, driven by the modern way of life, the growing life expectancy, the aging population Go et al. [1]. HF syndrome is the leading cause of hospitalization for people over the age of 65. One in five people aged 40 and over will develop HF

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### \*Correspondence:

Stergiani Petaloti, Intensive Care Unit,  
Serres General Hospital, 62100 Serres,  
Greece,

E-mail: stergpetaloti@gmail.com

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during their lifetime [2]. HF leads to admissions, hospitalizations, re-hospitalizations, which in America and Europe reach 1% to 2% of all admissions Cowie et al. [3]. Approximately 1 in 4 patients diagnosed with HF will be re-admitted within the next 30 days after discharge [4]. 30% of patients with HF require re-admission/re-hospitalization in the next 60 to 90 days Cowie et al. [3], Ponikowski et al. [5]. The flow of re-admissions, re-admissions of patients with HF in the 6 months after discharge from the hospital is reported to be 25% in Europe and 27% in the USA and Japan Ponikowski et al. [6-8].

Each treatment changes the natural history of the syndrome, doubling and tripling mortality. Hospitalizations, re-hospitalizations are responsible for 70% of the cost of HF. A patient with HF is estimated to have 3 to 4 re-admissions per year Mozaffarian et al. [9]. The effective treatment of those who leave the hospital with the diagnosis of HF, should start from the hospitalization and continue in the phase when the patient is now ambulatory and will include a multifaceted approach, with detailed instructions from diet, exercise, diet, fluid management, psychosocial support, but also continuous supervision for the early identification of signs of deterioration. The transition phase from hospital to home, according to studies, is the most vulnerable period for patients with HF, with a high risk of death, especially in the first weeks [10].

This syndrome is characterized by poor QOL of these patients, due to the symptoms and signs of the syndrome, repeated re-admissions, re-hospitalizations, social isolation that the syndrome brings to these patients, due to severe symptoms that make it difficult and tiring for patients, but also comorbidities, as well as depressive symptoms, which depression is a common comorbidity in patients with HF, which has been associated with worsening prognosis Joyce et al. [11,12].

One of the main causes for re-admissions is lack of self-care management, non-compliance with medication, lack of control of the management of early symptoms and signs of HF and timely feedback to prompt treatment and inclusive treatment. Timely visit to the hospital for additional health care [13].

Several studies, clinical trials have been designed since the mid-1990s to investigate the improvement of self-care, enhancing and strengthening the self-management of patients with HF through non-pharmacological management programs, led by specialist nurses, aiming to reduce re-admissions, through the acquisition of skills, abilities for the early detection of symptoms and signs of HF deregulation, improving survival with the ultimate goal of improving their health-related QOL [13-16].

However, some patients with HF, which is a sufficient percentage, cannot for many reasons, factors, so demographic, clinical, socioeconomic acquire the necessary, adequate self-management skills of HF, despite their participation in a training program, counseling, a non-pharmacological management program, as patients with HF are elderly, who, as mentioned above, suffer from comorbidities with severe symptoms, which need daily support, both from the family, caregivers, and medical intervention [11].

With the necessary, necessary feedback for the evaluation of the health status of the patients with HF and the appropriate coordination of their health care, with the appropriate non-pharmacological management program, with the appropriate cooperation of the interdisciplinary team, the holistic-interdisciplinary are identified and treated. severity of the health status of patients with HF. Empowering

the same patients with HF, if possible, as well as family and caregivers from the interdisciplinary team, with counseling, education, nursing approach, monitoring, enhancing, supporting self-management skills and early detection and progression of symptoms take collective action to address the problems associated with deterioration, always aiming to improve as much as possible the health-related QOL of these patients [17].

## Purpose

The purpose of this systematic review was to evaluate, to investigate the effect of counseling intervention by health professionals, nurses, on the care of patients with HF, by improving their self-care, through their empowerment, with educational programs upon their discharge from the hospital, in their transfer from the hospital to the home and then their follow-up at specific intervals.

## Material and Method

For the more complete study of the effect of the nursing counseling intervention on the QOL of the patients with HF, an SR of the studies related to the specific subject was carried out. The SR is an extremely important method that aims to find and analyze all research related to an issue and meet specific criteria set by the researcher himself. In the search strategy of the surveys included in the review, a research tool was used, as an organizational framework for ranking the terms based on the main topics of the search query. One such tool is the PICO tool, which focuses on 4 main categories [18]:

- Population
- Intervention
- Comparison and
- Outcomes

In the present review, the population corresponds to the patients with HF, the intervention corresponds to the nursing counseling intervention, there is no comparison in this search and the results correspond to the QOL. For each of these categories, all possible, different keywords were indexed and combined with the words "AND" and "OR" in the search, which was performed in two valid databases: The Pubmed database (Medline) and the Google Scholar database. The matching of the keywords with each category and the combination of the individual keywords used in the search in the databases was as follows: ("Advisory intervention" OR "nursing advisory intervention" OR "nursing counseling" OR "nursing interventions" OR "nurse – led interventions" OR "counseling" OR "mutual goal setting" OR "goal setting" OR "supportive educative strategies" OR "supportive interventions" OR "supportive strategies" OR "educative interventions" OR "educational interventions" OR "educative strategies" OR "advice" OR "intervention") AND "quality of life" AND ("heart failure" OR "cardiac failure" OR "cardiac rehabilitation"). Additionally, a secondary article search was performed through the bibliographic references of the original search articles. The material of this SR were articles of the last fifteen years, which explored the content of the counseling programs of the nursing intervention, as well as the participation of the patients with HF in the various forms of these programs.

## Criteria for entry and exclusion of studies

After a number of studies based on the index words used in the database search, the final selection of the surveys included in this SR was conducted on the basis of entry and exclusion criteria data. More

specifically, the main criteria for entering the surveys in the review were the following:

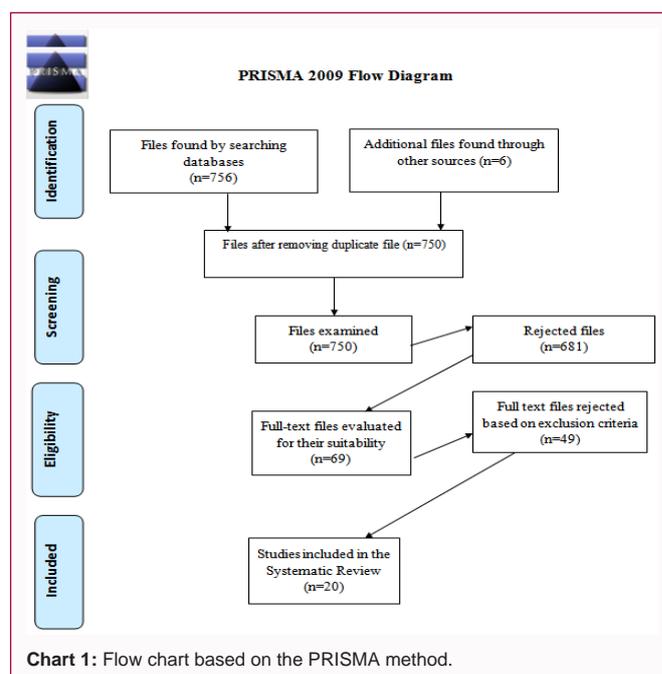
1. Articles must have been published in English or Greek.
2. The articles should have been published within the last 15 years (2004 to 2019), in order to focus the review on the latest research results.
3. The articles should be directly related to the effect of nursing counseling/educational interventions on the QOL of patients with HF.

Respectively, the main criteria for excluding investigations from SR were the following:

1. Articles that were not published in English or Greek.
2. Articles published before 2004.
3. The articles that were not directly related to the effect of nursing counseling/educational interventions on the QOL of patients with HF.

### Bibliography analysis

Scott [19] conducted an experimental study to examine the effects of nursing interventions that set common goals and support education in the QOL and mental health of patients with HF. For this purpose, a sample of patients with HF was selected from two home health care providers in the Midwest and these patients, after being grouped, were randomly divided into three different groups depending on the nursing intervention they received. The first group (group A) received the intervention of delimitation of common goals, the second group (group B) accepted the intervention of educational support and the third and last group (group C) received a placebo nursing intervention [19]. All participants, regardless of group, received routine management of HF, according to the protocol of home health care organizations, in group B; nurses interacted with patients to examine the impact of HF on their physical and mental health, in strengthening and empowering them, in their education and to set the goals to be achieved based on the clinical guidelines for HF, while in group C, the nurses taught the patients their self-management and at the same time provided them with additional support. The duration of each session was about one hour. The main outcome measures were QOL and mental health and were evaluated before patient randomization, 3 months later and 6 months later. Mental health was measured with the tool MHI-5 ("Mental Health Inventory-5") and QOL with the cardiac version of the QOL index ("Quality of Life Index", QLI), while the data were statistically processed with the program SPSS. Of the 96 people with HF who were initially approached, 88 were those who eventually participated in the study. Based on the results of the MHI-5 tool, the mental health levels of most participants, regardless of group, were lower than the value of the general population (74.74), but significantly higher levels of mental health were presented by the group receiving the joint demarcation intervention. After a period of 6 months ( $p$  value =0.003) [19]. The levels of total QOL and sub-sectors of QOL did not change to a statistically significant level in the placebo group until the 6<sup>th</sup> month, but significant changes were observed in the groups of common goal delimitation and educational support. More specifically, in the members of the educational support team, the health and functioning sector improved in 3 months (from  $18.14 \pm 5.64$  to  $20.33 \pm 6.34$ ) and this improvement was maintained in 6 months ( $20.94 \pm 6.68$ ) and the psychosocial/intellectual sector also



improved in 6 months ( $p$  value =0.04). Respectively, the group of demarcation of common goals marked a significant improvement, both in the field of health/function (from  $18.54 \pm 5.72$  to  $24.19 \pm 6$ ), and in the psychosocial/spiritual field (from  $24.53 \pm 4.53$  to  $27.57 \pm 3$ ) after a period of 6 months. Therefore, nursing intervention that sets common goals, as well as the provision of education, seem to be two methods that significantly improve the QOL and mental health of patients with HF, when applied for a period of at least 6 months continuously [19].

One year later, the study by Martensson [20] was published, which aims to determine the effects of a nurse-led intervention designed to improve the self-management of patients with HF and thus increase health-related QOL and reducing depression. The sample consisted of 153 patients in total, who were divided into two subgroups: The control group and the intervention group. The control group received routine care, which included visits by nurses and less frequently by a physician, while the intervention team included a training program provided by nurses, in which the latter were called upon to inform and educate patients with CHF and their family regarding HF and patient self-management, while at the same time, patients were monitored by telephone on a monthly basis for a total of 12 months by a Primary Health Care (PHC) nurse. The results of this study showed that the effects of this intervention were limited [20]. In particular, significant differences were identified only in the Physical Dimension of the QOL and in the depression of the patients. Comparing the results between the two groups over 3 and 12 months, the intervention group maintained significantly higher QOL and significantly lower levels of depression than the control group, especially among women. Therefore, a nurse-led intervention leads to limited results, although both physically and psychologically, the intervention team maintains significantly improved levels of QOL and depression within 12 months of starting the intervention [20].

The main purpose of the study by Stromberg [21] was to assess the effects of a training program based on computers, knowledge, QOL and patient compliance with HF, with particular emphasis on gender differences. For this purpose, a total of 154 patients, with a mean age of

Table 1:

|  | Search Number | Key-words - Search Key-words  | Number of Inquiries Found in Pubmed Database |
|--|---------------|---|--|
| <b>Population: Patients with HF</b>                  | #1            | "Heart failure" OR "Cardiac failure" OR "cardiac rehabilitation"  | 212.200                                      |
| <b>Intervention: Nursing Counseling Intervention</b> | #2            | "Advisory intervention" OR "nursing advisory intervention" OR "nursing counseling" OR "nursing interventions" OR "nurse – led interventions" OR "counseling" OR "mutual goal setting" OR "goal setting" OR "supportive educative strategies" OR "supportive interventions" OR "supportive strategies" OR "educative interventions" OR "educational interventions" OR "educative strategies" OR "advice" OR "intervention" | 776.590                                      |
| <b>Comparison</b>                                    | #3            | -   | -  |
| <b>Outcomes: Quality of Life</b>                     | #4            | "quality of life"   | 310.772                                      |
| <b>Combination</b>                                   | #5            | #1 AND #2 AND #3 AND #4   | 756  |

70 years, were recruited from 5 different clinics and these patients were divided into two groups: The group that received only the standard training and the group that, in addition to the standard training, received additional computer-based education [21]. According to the results of this study, patients' knowledge increased significantly in both groups, after 1 month, but the intervention group tended to show higher knowledge than the control group (p=0.07). Also, the increase in knowledge was significantly higher in the intervention group after 6 months (p=0.03). In contrast, no significant differences were observed between the two groups in the degree of adherence to treatment, QOL and self-care. Finally, comparing the two sexes, women showed significantly lower QOL and it did not improve after 6 months, as happened with men (p=0.0001). Therefore, this nursing intervention providing computer education increases the knowledge of patients with HF about their self-care, but does not significantly improve their QOL and their compliance with medication [21].

In 2010, a prospective, controlled study was published by Cruz et al., which investigated the impact of a training and coordination program on QOL in patients with HF. The sample consisted of 412 patients, who were divided into two groups: The control group, which received routine care, and the intervention group, which received specific instructions and remote coordination [22]. At some point in the follow-up of patients (3.6 ± 2.2 years), 6.3% of participants underwent heart transplantation and 31.8% underwent surgery. Based on the results, there were significant improvements in the intervention group in terms of overall QOL score, physical, functional capacity, emotional factor and social dimension, compared to the control group. In addition, the emotional factor improved earlier in the intervention group compared to the control group. Finally, QOL was associated with specific events after the completion of the intervention. Overall, this intervention significantly improved the QOL of patients with HF [22].

The main purpose of the quasi-experimental study of [23] was to determine whether patients with HF receiving a health education intervention on improving their self-care for HF self-management (HUSK program ("Health education about Heart Failure Self-Care")), show higher QOL, better functional status, fewer unpleasant symptoms and lower rates of re-admission to the hospital, compared to patients who did not receive the intervention. The sample of this study consisted of 27 HF patients admitted to 2 general cardiology clinics of a medical center in Taipei, Taiwan, were divided into two subgroups: The first group (control group, 13 people) received routine care and the second group (intervention group, 14 people) received the usual care and the HFSC program. The intervention lasted 4 months, while the total study time was equal with 12 months [22]. The outcome measures evaluated were the Symptom Distress

Questionnaire (SDQ), the SMWT (Six Minute Walk Test) to assess the participant's functional status, the SF-36 questionnaire to assess the QOL and the rate of re-admission of patients with HF to the hospital. Based on the results, after 3 months, significant differences were observed in QOL (p value <0.05), functional capacity (p value <0.01) and symptoms of discomfort, anxiety, shortness of breath (p value <0.01), between the intervention group and the control group, but no significant differences were observed in the rate of re-admission of patients with HF to the hospital. Therefore, the nursing counseling intervention training on the improvement of self-care, self-management significantly improves the symptoms and the functional state-ability and improves the QOL of patients with HF. Therefore, nurses should utilize the methods and principles of this nursing education, counseling intervention to provide improved education and better follow-up to this patient group [22].

The main purpose of the study by Kenealy [24] was to assess the effect of telemonitoring on health-related QOL, cost, hospital use, self-care and patient experiences, informal caregivers and health professionals. In total, a total of 171 patients were collected, who could be divided according to their disease into three groups: In the group of patients with HF (group A), in the group of patients with Chronic Obstructive Pulmonary Disease (COPD) and in the group of patients with diabetes. Patients with diabetes received only the intervention because only the usual care was considered immoral, while the other patients received either the intervention or the standard care (control group). According to the results, no significant changes in QOL and self-efficacy were observed, while, on the contrary, the levels of stress and depression were significantly reduced only in the intervention group [24]. No significant differences were observed in costs, outpatient visits, and emergency department visits (ICUs), hospitalization days and hospital admissions. In terms of patient experiences, all patients who participated in this study were positive and many of them felt safer and receiving more health care. Patients themselves, as well as their families, learned much more about managing their condition, while health professionals said they saw several potential benefits of telecontrol and after some initial technical problems, felt that telecontrol allowed them to monitor effectively more patients. Overall, this particular patient care telephony program leads to a significant improvement in the knowledge and self-care practices of patients, their families and careers, as well as their psychological state, but does not significantly improve their IQ [24].

Koberich [25] conducted a monocentric, prospective, controlled randomized study to evaluate the effects of a nursing education intervention with telephone monitoring of QOL, self-care Behavior, and dependence on care in patients with chronic HF. For this purpose, a sample of 110 patients was collected, who were randomly divided

Table 2:

| Authors/Year    | Country | Number of Centers where the research was conducted | Sample Number        | Sample Features   | Interventions   | Outcomes   | Study duration (in months) | Main Results  |
|-----------------|---------|--|----------------------|---|---|--|----------------------------|---|
| Scott [19]      | USA     | 2  | 88 patients with HF  | <ol style="list-style-type: none"> <li>1. Primary diagnosis of HF.</li> <li>2. Age over 18 years.</li> <li>3. Understanding and speaking the English language.</li> </ol>   | Common goal delimitation intervention, educational support intervention, placebo nursing intervention           | MHI – 5, QLI)  | 6 months                   | The levels of mental health of most participants, regardless of group, were lower than the value of the general population (74.74), but significantly higher levels of mental health were presented by the group that received the intervention of demarcation of common goals after 6 months (p value =0.003). Significant changes in QoL were observed in the groups of demarcation of common goals and educational support.  |
| Martensson [20] | Sweden  | 8  | 153 patients with HF | <ol style="list-style-type: none"> <li>1. Diagnosis of HF, based on radiographic findings, echocardiogram or presence of typical signs and symptoms</li> <li>2. Age over 18 years</li> <li>3. NYHA class II to IV</li> <li>4. Accommodation in an area that serves the research</li> </ol>                                | Nursing educational intervention for the purpose of informing and educating patients with HF and their families | Questionnaire SF - 36, Zung Depression Scale ("Zung Self - rating Depression Scale") | 12 months                  | The effects of this intervention were limited. Significant differences were found only in the physical dimension/ability of QoL and in patients' depression. At 3 and 12 months of follow-up, the intervention group maintained significantly higher IB and significantly lower levels of depression than the control group, especially among women.  |
| Stromberg [21]  | Sweden  | 5  | 154 patients with HF | <ol style="list-style-type: none"> <li>1. Patients with HF</li> </ol>   | Computer-based nursing education intervention   | Questions about patient knowledge and compliance, EQ - 5D questionnaire (EuroQol)    | 6 months                   | Patients' knowledge increased significantly in both groups after 1 month, but the intervention group tended to show more knowledge than the control group (p=0.07). Also, the increase in knowledge was statistically significantly higher in the intervention group after 6 months (p=0.03). No significant differences were observed between the two groups in terms of the degree of compliance with the treatment, QoL and self-care. Women showed statistically significantly lower QoL than men (p=0.0001). |
| Cruz [22]       | Brazil  | 1  | 412 patients with HF | <ol style="list-style-type: none"> <li>1. Age 18 years and over</li> <li>2. Irreversible HF for at least 6 months</li> </ol>  | Training intervention and care coordination of the HF.  | MLWHFQ ("Minnesota living with heart failure questionnaire")                         | 72 months                  | There were significant improvements in the intervention group in terms of overall QoL score, physical factor/functional capacity, emotional factor and other questions, compared to the control group. In addition, the emotional factor improved earlier in the intervention group compared to the control group. Finally, QoL was not associated with specific situations/events after the completion of the intervention.  |
| Wang [23]       | Taiwan  | 1  | 27 patients with HF  | <ol style="list-style-type: none"> <li>1. Independence of patients' movement</li> <li>2. Mental clarity of patients</li> <li>3. Ability to communicate with patients in Taiwanese or Chinese</li> <li>4. Patients' willingness to participate in this research</li> <li>5. Written consent of the participants</li> </ol> | Nursing training intervention on self-care improvement for HF (HFSC program)                                    | SDQ, SMWT, SF - 36   | 12 months                  | Significant differences were observed in QoL (p value <0.05), functional capacity (p value <0.01) and typical symptoms of HF (discomfort) (p value <0.01) between the intervention group and control group, but no significant differences were observed in the rate of hospitalization.  |

|                              |             |   |  |  |  |  |          |  |
|------------------------------|-------------|---|--|--|--|--|----------|--|
| <b>Kenealy [24]</b>          | New Zealand | 3 | 171 patients (98 received the intervention and 73 belonged to the control group) | <ol style="list-style-type: none"> <li>1. Age 16 years and over</li> <li>2. Accommodation in their home</li> <li>3. Ability to communicate in English</li> <li>4. Ability to physically manage the equipment</li> </ol>  | Telephony nursing intervention                             | Questionnaire SF – 36, HAD (“Hospital Anxiety and Depression”) SCHFI v6.2 (“Self care of Heart Failure Index”), Questionnaire SGRQ – C (“St George Respiratory Questionnaire”)   | 6 months | No significant changes were observed in QoL, disease-specific measures and self-efficacy, while, on the contrary, stress and depression levels were significantly reduced only in the intervention group. In terms of patient experiences, all of the patients in this study were positive, and many felt safer and more cared for. Patients themselves, as well as their families, learned much more about managing their condition.  |
| <b>Koberich [25]</b>         | Germany     | 1 | 110 patients with HF   | <ol style="list-style-type: none"> <li>1. Patients with Left Ventricular ejection fraction (LVEF) less than or equal to 40%</li> <li>2. Class II to IV, based on NYHA</li> </ol>   | Nursing educational intervention with telephone monitoring | EHFScBS (“European Heart Failure Self – care behavior Scale”), KCCQ (“Kansas city cardiomyopathy questionnaire”), CDS (“Care Dependency Scale”)  | 3 μήνες  | A significant time effect (p=0.00009) and a significant time and intervention interaction (p=0.043) were observed in self-care behaviors. The increase in improvement in self-care behaviors was significantly higher in the intervention group (3.14 vs. 1.04). Regarding QoL, only a significant effect of time was observed (p=0.00017), the QoL of patients increased after the period of 3 months in both groups, but no significant interaction of time and intervention was observed (p = 0.203). |
| <b>Clark [26]</b>            | Texas       | 1 | 50 patients with HF  | <ol style="list-style-type: none"> <li>1. Diagnosis of diastolic or systolic HF class I to III based on NYHA</li> <li>2. Ability to speak, read and write English</li> <li>3. Willingness to participate in this research</li> <li>4. Ability to survive independently at home</li> <li>5. Score of at least 23 on the MMSE (“Mini - Mental State Examination”)</li> </ol>                 | Nursing intervention training and support at home          | Questionnaire KCCQ (“Kansas City Cardiomyopathy Questionnaire”), GDS (“Geriatric Depression Scale”), Questionnaire MIA (“Metamemory in Adulthood Questionnaire”), Test HFKT, “HF Knowledge Test”), SCHFI, “Self – Care of Heart Failure Index” | 9 months | The intervention team showed significant improvements in QoL, self-efficacy, functional status/ability self-care and self-care knowledge. In both groups, there was a significant improvement in depression scores.  |
| <b>Wang [27]</b>             | Taiwan      | 1 | 92 patients with HF  | <ol style="list-style-type: none"> <li>1. Diagnosis of functional class NYHA I to IV by a cardiologist</li> <li>2. Ability to communicate in Taiwanese or Mandarin</li> <li>3. Full consciousness</li> <li>4. Acceptance of participation in the research</li> </ol>   | Supportive, educational nursing care program               | PFS (“Piper fatigue scale”), MLHFQ (“Minnesota living with heart failure questionnaire”)   | 3 months | The results of this study showed that there was a significant reduction in patient fatigue after 3 months, while in the control group, no corresponding changes were observed. In addition, the intervention team showed a significantly greater reduction in fatigue levels and a significantly higher improvement in QoL after 3 months.   |
| <b>Masterson Creber [28]</b> | USA         | 1 | 67 patients with HF  | <ol style="list-style-type: none"> <li>1. The primary or secondary diagnosis of HF.</li> <li>2. The ability to speak and write English</li> <li>3. Age over 18 years</li> <li>4. The ability of independent self-care</li> <li>5. Stay 30 miles from University Hospital</li> <li>6. The existence of typical symptoms of HF.</li> <li>7. The existence of elementary education</li> </ol> | Nursing intervention mobilization through interviews       | KCCQ, SCHFI, HFSPS   | 3 months | There were no statistically significant differences between the two groups in terms of QoL, physical symptoms, self-care confidence and maintenance of self-care ability.  |

|                          |                |   |                                       |  |   |   |            |   |
|--------------------------|----------------|---|---------------------------------------|--|---|---|------------|---|
| <b>Meng [29]</b>         | Germany        | 4 | 475 patients with HF                  | <ol style="list-style-type: none"> <li>1. Diagnosis of chronic HF.</li> <li>2. Patients with Left Ventricular ejection fraction (LVEF) less than or equal to 40%</li> <li>3. Class II to III, based on the New York Heart Association (NYHA)</li> </ol>  | Self-management training program focusing on the patient with HF.                         | <p>German version of the heiQ ("Health Education Impact Questionnaire"), Kansas City Cardiomyopathy Questionnaire, a Godin Leisure - Time Exercise Questionnaire MARS - D ("Medication Adherence Report Scale"), German version of the KCCQ questionnaire for measuring health-related MS</p> | 12 months  | <p>There was a significant but small difference in the improvement of patients' self-management ability between the two groups (p&lt;0.05). Significant small effects were observed on treatment satisfaction and symptom regulation over 6 months, as well as on physical activity/ability and symptom regulation after 12 months (p&lt;0.05). After 6 and 12 months, a significant improvement was observed in QoL in both groups, and in the intervention group the improvement was higher, but there was no statistically significant difference between the two groups (p=0.33).</p> |
| <b>EI – Jawahri [30]</b> | Boston         | 7 | 346 patients with HF                  | <ol style="list-style-type: none"> <li>1. Age 64 years and over</li> <li>2. Ability to provide conscious consent</li> <li>3. Ability to communicate in English</li> <li>4. Standard diagnosis of advanced HF with limited prognosis</li> </ol>   | Nursing intervention counseling and support for serious decision making and care planning | Questionnaire with questions about demographic / personal characteristics and the categories of care they choose  | 3 months   | <p>In the intervention group, 51% of participants chose comfort care, 25% limited care, 22% life-prolonging care, and 2% were unsure of which decision to make. Respectively, in the control group, the percentage of people who chose comfort care was equal to 30%, 22% of people chose limited care, 41% life-long care and 7% said they were unsure. Patients in the intervention group, compared with patients in the control group, were more likely to reject CRP (p&lt;0.001) and intubation (p&lt;0.001) and had higher knowledge scores (p&lt;0.001).</p>                       |
| <b>Cajanding [31]</b>    | United Kingdom | 1 | 100 patients with HF                  | <ol style="list-style-type: none"> <li>1. Age equal to or over 18 years</li> <li>2. Recent hospitalization from where the participants were collected</li> <li>3. Treatment for heart failure and not for other comorbidities</li> </ol>   | Nurses guided cognitive / behavioural therapy   | <p>Questionnaire MLHF ("Minnesota Living with Failure Questionnaire"), RSES ("Rosenberg Self – Esteem Scale"), CDS ("Cardiac Depression Scale")</p>   | 3 months   | <p>Participants in both groups had low quality of life and self-esteem scores and moderate levels of depressive symptoms at the beginning of the study. After the intervention lasted a total of 12 weeks, the participants who belonged to the intervention group showed a significant improvement in their quality of life, self-esteem and mood compared to the other participants who received only standard care.</p>  |
| <b>Wang [32]</b>         | China          | 1 | 62 patients with HF                   | <ol style="list-style-type: none"> <li>1. Diagnosis of heart failure class II to IV</li> <li>2. Age 60 years and over</li> <li>3. The stable condition of patients</li> <li>4. The presence of typical symptoms</li> <li>5. The presence of signs of HF that have disappeared after a treatment</li> <li>6. The patient's discharge from the hospital</li> </ol> | Nursing educational intervention based on the PRECEDE model                               | <p>MLHFQ, PHQ – 9, EHFScBS – 9, questionnaire based on the PRECEDE model</p>  | 3,5 months | <p>There was a significant improvement in quality of life, depression, self-care Behavior, and predisposition, reinforcement, and activation factors in educational diagnosis and evaluation among patients in the intervention group, as opposed to patients in the non-intervention group. Significant differences. Patients' QoL was significantly correlated with personal health (p value &lt;0.001/r=0.463) and patients' self-care behaviors (p value &lt;0.001/r=0.584).</p>  |
| <b>Mediano [33]</b>      | Brazil         | 1 | 12 patients with Chagas heart failure | <ol style="list-style-type: none"> <li>1. Existence of stage C or D Chagas cardiomyopathy</li> <li>2. Absence of a history of clinical effects during the last 3 months</li> </ol>   | Heart rehabilitation program  | SF - 36   | 8 months   | <p>There were significant improvements in physical function (p=0.003), physical role (p=0.03), and physical pain (p=0.02), as well as overall physical health. In contrast, no significant changes were observed in other areas of QoL, as well as in overall mental health.</p>  |

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| <p><b>Sezgin [34]</b></p>        | <p>Turkey</p> | <p>1</p>                | <p>90 patients with HF</p>   | <ol style="list-style-type: none"> <li>1. Age 18 years and over</li> <li>2. Functional classification as NYHA II or NYHAIII</li> <li>3. Writing ability</li> <li>4. Ability to understand and speak the Turkish language</li> <li>5. Willingness to participate</li> </ol>  | <p>Nursing counseling intervention for care</p>  | <p>SCHFI (Self-care of Heart Failure Index), Left ventricular dysfunction scale, hospital admission</p>   | <p>6 months</p> | <p>There was a statistically significant difference between the control group and the intervention group in terms of QoL scores (p&lt;0.001) and self-care scores (p&lt;0.001) at both 3 and 6 months. In addition, while the intervention group recorded fewer re-admissions to the hospital over a period of 3 months (p&lt;0.05), no significant differences were observed over a period of 6 months (p=0.05) between the two groups.</p>   |
| <p><b>Dougherty [35]</b></p>     | <p>USA</p>    | <p>1</p>                | <p>41 patients with HF and 9 health care providers</p>                                   | <ol style="list-style-type: none"> <li>1. Diagnosis of HF with reduced ejection fraction (HFrEF) less than or equal to 40% or HF with retained ejection fraction (HFpEF) less than 50%</li> <li>2. Completion of outpatient visit within the last 6 months with a scheduled follow-up visit</li> <li>3. Ability to read, speak and write in English</li> </ol>  | <p>Intervention to determine the goals and next steps of the treatment of HF.</p>        | <p>Interviews with open-ended questions about the patient's experience of the intervention, the goals of care, the acceptance of the structure and characteristics of the intervention, the quality of the discussion with the health care provider and the suggestions for improving this intervention</p> | <p>6 months</p> | <p>Patients' benefits from this nursing intervention included enhanced communication with the health care professional and his or her family members, increased confidence in having an honest and meaningful discussion with the health care provider, and constant updating and upgrading of his/her knowledge HF. The benefits of the health professionals from this intervention were the facilitation of the discussion with the patient and the learning of new information about the goals and values of the patient.</p>                                     |
| <p><b>Bernocchi [36]</b></p>     | <p>Italy</p>  | <p>Is not mentioned</p> | <p>112 patients with chronic heart failure and chronic obstructive pulmonary disease</p> | <ol style="list-style-type: none"> <li>1. Confirmed diagnosis of chronic HF and chronic obstructive pulmonary disease (COPD)</li> <li>2. Patients should have returned home after hospitalization</li> <li>3. Patients should not have physical activity limitations due to non-cardiac or pulmonary conditions</li> <li>4. Patients had to have a life expectancy of more than 6 months</li> <li>5. Patients had to have mental clarity.</li> </ol>  | <p>Integrated Telerehabilitation Home - Based Program, Tereab - HBP</p>                  | <p>6MWT, CAT, MLHFQ, PASE, MRC, Barthel</p>   | <p>6 months</p> | <p>Patients' QoL (p value =0 in the CAT tool, p-value =0.0007 in the MLHFQ tool), as well as dyspnoea (p value =0.05), disability (p value = 0.0006) and physical activity (p value =0.0015), improved significantly, only in the group that received the nursing intervention, while the average time for hospitalization or death was longer in the case of the intervention group (113.4 days vs. 104.7 in the control group).</p>  |
| <p><b>Ng &amp; Wong [37]</b></p> | <p>China</p>  | <p>3</p>                | <p>84 patients with end-stage HF.</p>  | <ol style="list-style-type: none"> <li>1. Ability to communicate</li> <li>2. Ability to communicate by telephone</li> <li>3. Accommodation in the area that served the research</li> <li>4. Combination of two of the following criteria: (a) chronic HF with functional class NYHA III or IV, repeated hospitalization (more than or equal to 2 re-admissions in the last 6 months ), due to HF-related symptoms, the presence of physical or psychological symptoms, life expectancy of one year based on the doctor</li> </ol> | <p>Nursing palliative intervention for counseling and follow-up of patients with HF.</p> | <p>MQOL - HK Questionnaire ("McGill Quality of Life Questionnaire - Hong Kong"), CHQ - C tool, ESAS (Edmonton Symptom Assessment Scale), PPS ("Palliative Performance Scale"), ZBI tool (Zarit) Burden Interview ")</p>   | <p>3 months</p> | <p>There was a statistically significant difference in the effects between the two groups, with the intervention group having a significantly higher overall QoL score than the control group (p=0.016). In contrast, there were no significant differences in effects between the two groups in terms of symptoms and functional status over a 12-week period. The intervention group showed significantly higher levels of satisfaction (p=0.001) and significantly lower caregiver workload (p=0.024) than the control group over a total period of 3 months.</p> |

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| Abbasi [38] | Iran | 1 | 111 patients with chronic HF. | <ol style="list-style-type: none"> <li>1. Diagnosis of HF by a cardiologist</li> <li>2. Ability to speak and write in Farsi</li> <li>3. Ability to use a computer by the patient himself or by a member of his family</li> </ol> | Self-management training program for patients with chronic HF. | Questionnaire QoL in the Iranian edition IHF - QoL ("Iranian Heart Failure Quality of Life") | 3 months | <p>Statistically significant differences were observed between the multimedia groups and the multiple methods in terms of post-intervention QoL, compared to the control group (<math>p &lt; 0.001</math> and <math>p = 0.002</math>, respectively).</p> <p>Statistically significant differences were also observed between the two groups of interventions in terms of knowledge dimension and self-effectiveness (<math>p = 0.047</math>). In contrast, no statistically significant differences were observed between the two intervention groups with respect to the other aspects of the individual QOL.</p> |
|-------------|------|---|-------------------------------|--|--|--|----------|--|

into two groups: The control group and the intervention group. In the control group (52 patients), patients received only standard medical treatment, while in the intervention group (58 patients), patients received, in addition to standard medical treatment, training on self-care, self-management of HF, through continuous telephone communication and monitoring [25]. According to the results of this study, a significant effect of time ( $p = 0.00009$ ) and a significant interaction of time and intervention ( $p = 0.043$ ) was observed in self-care behaviors, since in both groups, self-care behaviors improved after a period of 3 months. However, the increase in self-care Behavior improvement was significantly higher in the intervention group (3.14 vs. 1.04). In contrast, with respect to QOL, only a significant effect of time was observed ( $p = 0.00017$ ), i.e. the QOL of patients with HF increased after the period of 3 months in both groups, but no significant interaction of time and intervention was observed ( $p = 0.203$ ), since no statistically significant higher improvement of QOL was found in the intervention group. Finally, in terms of care dependence, no statistically significant effect of time ( $p = 0.186$ ) was observed, nor a statistically significant interaction of time and intervention ( $p = 0.676$ ). Therefore, a nursing education intervention through telephone monitoring in patients with HF is able to improve overall self-care behaviors, but not the QOL and the degree of care dependence on other individuals [25].

Clark [26] conducted a prospective randomized study to assess the effects of a home education and support intervention, using strategies that improve health and self-care in adults with CHF. The sample consisted of 50 individuals, who were divided into two groups. The intervention team received a 3-month training and support program, followed by 3 months of support by phone and email and another 3 months without any communication between patients and competent nurses [26]. The outcome measures of the intervention were health status, including QOL, self-efficacy, functional capacity, psychological dimension, depressive symptoms, improved self-care of patients with HF, and the effectiveness of the intervention was evaluated once at the end of the study. The results showed that the intervention team showed significant improvements in QOL, self-efficacy, functional status, self-care and self-care, self-management knowledge. Also, in both groups, there was a significant improvement in depression scores. Therefore, a nursing counseling intervention to educate patients with HF at home significantly improves their QOL, their health status and improves the self-care outcomes of patients with HF [26].

Wang [27] conducted a controlled randomized study to investigate the effects of a supportive, educational nursing care program on QOL

and the fatigue of patients with HF. A total of 92 patients with HF were collected, who were randomly divided into two subgroups: The control group, which included a total of 45 participants, and the intervention group, which consisted of a total of 47 participants. Patients in the control group received routine nursing care, which included the provision of written material and oral training by specialist nurses during the 1<sup>st</sup> and 3<sup>rd</sup> weeks after the patient was discharged from the hospital. In contrast, patients in the intervention group received a supportive nursing education, counseling program, which included assessing fatigue, and training to improve self-management, self-care, and meeting all disorganization situations [27]. This intervention was performed by a specialized cardiac nurse during four direct contact interviews and three telephone interviews conducted for the follow-up of patients with HF. The main outcome measures were QOL and fatigue, and were evaluated, both at baseline and 4, 8 and 12 weeks after enrolling participants in the groups. The results of this study showed that there was a significant reduction in the fatigue of patients with HF after 3 months, while in the control group, no corresponding changes were observed. In addition, the intervention team showed a significantly higher reduction in fatigue levels and a significantly higher improvement in QOL after 3 months. Therefore, the educational, supportive nursing program to improve self-care is particularly effective in reducing fatigue and increasing the QOL of patients with CF [27].

The main purpose of the monocentric, Randomized Controlled Study of Masterson Creber [28] was to investigate the effectiveness of a nursing personalized mobilization intervention through interviews in QOL, physical symptoms, and self-care behaviors among patients with HF. Participants were a total of 67 patients with HF and were divided into two subgroups, the control group that received routine care, and the intervention group that received a mobilization intervention through interviews. During this intervention, a home visit was made and then 3 to 4 phone calls, over a total period of 3 months, during which the nurses assisted the patients in setting small and larger goals related to the self-care of the patients with HF [28]. To evaluate the effectiveness of the intervention, QOL was examined through the KCCQ ("Kansas City Cardiomyopathy Questionnaire"), self-care through the SCHFI tool, and the physical symptoms associated with HF through the HFSPS scale ("Heart Failure Somatic Perception Scale"). The results showed that there were no statistically significant differences between the two groups in terms of QOL, physical symptoms, self-care confidence and maintaining self-care ability. Therefore, the nursing intervention under study did not lead to a significant improvement in QOL and other parameters of patients with HF [28].

In the multicentre, controlled randomized study of Meng et al. [29], the effect of a patient-centered self-management training program on patients with chronic systolic HF compared to standard care training during cardiac rehabilitation was evaluated. The sample collected consisted of 475 patients with HF, who were randomly divided into two groups [29]. In the intervention group the patients received a new self-management training program, while in the control group; the patients received the usual care, i.e. a short training program based on a lecture. Outcome measures evaluated were self-efficacy; Health-related QOL health self-care behavior, treatment satisfaction, and these measures were evaluated at baseline, 6 and 12 months after the initiation of intervention [29]. The results showed that there was a significant but small difference in the improvement of the self-management ability of patients with HF between the two groups, in the short term ( $p < 0.05$ ). In addition, significant small effects were observed on treatment satisfaction and symptom regulation over 6 months, as well as on physical activity, fitness, and symptom regulation after 12 months ( $p < 0.05$ ). Finally, with regard to QOL, after 6 and 12 months, a significant improvement was observed in both groups and in the intervention group the improvement was higher, but there was no statistically significant difference between the two groups ( $p = 0.33$ ). Overall, a self-administered program that focuses on the patient with HF may be more effective in terms of specific self-management outcomes than standard care training, both in the short and long term, but does not lead to significant differences in the QOL of patients with HF [29].

The controlled randomized study of El-Jawahri et al. [30] examined the effect of nursing intervention in providing counseling and support for serious decision making and care planning in patients with CHF. The sample consisted of 246 patients aged 64 years and older with HF, who were divided into two subgroups. In the control group, patients were informed about the goals of self-care, such as life extension care, limited care and comfort, self-management care through an oral description, while in the intervention group, patients received the same oral information and in addition, a video-assisted intervention (6 min of video depicting the 3 levels of care) and an advanced self-care programming list. Based on the results, in the intervention group, 51% of the participants chose comfort care, 25% limited care, 22% life-prolonging care and 2% were unsure about which decision to make [30]. Respectively, in the control group, the percentage of people who chose comfort care was equal to 30%, 22% of people chose limited care, 41% life-long care and 7% said they were unsure. In addition, patients in the intervention group, compared with patients in the control group, were more likely to renounce CRP ( $p < 0.001$ ) and intubation ( $p < 0.001$ ) and had higher knowledge scores ( $p < 0.001$ ). Overall, patients with HF who watched the video were more informed and were more likely to choose their health care based on improving their IQ and comfort and in particular, were more likely to choose comfort care and less likely to choose intubation or CRP, compared with patients who received only oral information about their self-care goals [30].

Cajanding [31] conducted a randomized controlled study to evaluate the effectiveness of a nurse-guided cognitive/behavioral/educational intervention in QOL, self-esteem and empowerment of patients with HF. The sample consisted of 100 patients, who were enrolled in either the control group (48 people), which received routine care, or the intervention group (52 people), which received, in addition to routine care, a nurses-led program. cognitive/behavioral/counseling intervention, focusing on the patient's education, self-

regulation, self-management of the HF, self-care, practice of his skills, reconstruction of his cognitive abilities, his empowerment and the development of his mental abilities [31]. The main outcome measures measured were the QOL, self-esteem and mood of the participants, and these measures were measured immediately before and immediately after the intervention. According to the results, participants in both groups had low QOL scores and self-esteem and moderate levels of depressive symptoms at the beginning of the study. After the intervention lasting a total of 12 weeks, the participants who belonged to the intervention group showed a significant improvement in their QOL, their self-esteem and their mental mood compared to the other participants who received only the standard routine care. Therefore, it is concluded that a nurses-led cognitive/behavioral/educational/counseling intervention is an effective strategy for improving the QOL, self-esteem, and empowerment of patients with HF [31].

Wang et al. [32] conducted a study to investigate the effects of the PRECEDE model on QOL, self-care behaviors and depression in elderly patients with HF. The patients were from the Geriatrics and Cardiology department of the researchers' hospital and those who met the admission criteria were randomly divided into two groups, the control group and the intervention group. All patients in the sample received conventional medical care, while patients in the intervention group received an additional 9 sessions of educational intervention based on the PRECEDE model [32]. Data were collected at the beginning of the study and 3 months after the intervention, through 4 different questionnaires: The MLHFQ ("Minnesota Living with Heart Failure Questionnaire") questionnaire for the investigation of PH, the PHQ - 9 questionnaire ("Person Health Questionnaire")/9 questions) to explore personal health, the EHFScBS - 9 ("European Heart Failure Self - Care Behavior Scale" questionnaire/9 questions) to investigate self-care Behavior and the PRECEDE-based factor assessment questionnaire predisposition, reinforcement and activation related to educational diagnosis and assessment. The results showed that there was a significant improvement in QOL, depression, self-care behavior and predisposition, reinforcement and activation factors regarding educational diagnosis and assessment among patients belonging to the intervention group, as opposed to the patient group, where no significant differences were observed [32]. In addition, the QOL of patients with HF was significantly correlated with personal health ( $p$  value  $< 0.001$ / $r = 0.463$ ) and with patients' self-care behaviors ( $p$  value  $< 0.001$ / $r = 0.584$ ). Therefore, it is concluded that promoting the education of patients with HF through nursing interventions, is effective in relieving the symptoms of depression, improving QOL and enhancing the self-care of patients with HF [32].

The main purpose of the study by Mediano et al. [33] was to evaluate the effects of a cardiac rehabilitation program on the QOL of patients with HF. The sample consisted of 12 patients with HF who participated in a cardiac rehabilitation program, which included exercise sessions, dietary guidance, and medication advice. The main outcome measure was the QOL, which was assessed with the SF - 36 questionnaire in the Portuguese version. Based on the results, there were significant improvements in physical function, functional capacity ( $p = 0.003$ ), physical role ( $p = 0.03$ ), and physical pain ( $p = 0.02$ ), as well as overall physical health. In contrast, no significant changes were observed in other areas of QOL, as well as in overall mental health. Therefore, this cardiac rehabilitation program by providing exercise and nutritional, medication advice to patients with CHF only improves physical health, functional capacity, but not the other aspects of QOL in people with CHF [33].

The main purpose of the monocentric, mono-blind randomized controlled study by Sezgin et al. [34] was to examine the effect of a nursing counseling intervention on the improvement of QOL, the improvement of self-care and the hospital admission rate among patients with HF. The sample consisted of a total of 90 patients with HF, who were randomly divided into two different groups: The control group and the intervention group. In the control group, the usual care for HF was performed, i.e. a clinical examination was performed by the doctor, appropriate medication and an appointment for follow-up, while in the intervention group, in addition to the usual care, patients received an educational booklet based on her theory. HF self-care and a daily monitoring chart, which was expected to record various measurements and characteristics, such as blood pressure, pulse, patient weight, swelling, and daily medication [34]. In addition, the patients in the intervention group received a set of instructions for various factors that they should pay attention to in their daily lives in the form of magnets. Outcome measures, such as QOL and patient self-care, were collected both at the start of the intervention and 3 and 6 months later. Based on the results, a statistically significant difference was observed between the control group and the intervention group in terms of QOL scores ( $p < 0.001$ ) and self-care ( $p < 0.001$ ), at both 3 and 6 months. In addition, while the intervention group recorded fewer re-admissions to the hospital over a period of 3 months ( $p < 0.05$ ), no significant differences were observed over a period of 6 months ( $p = 0.05$ ) between the two groups. Therefore, nursing intervention for counseling and self-care instructions seems to significantly improve the care and self-care of patients with HF, while, on the contrary, does not lead to a significant reduction in re-admission of patients to the hospital in 6 months [34].

Dougherty et al. [35] conducted a study to describe the conceptual framework, elements, and outcomes of a nursing intervention for care goals in terms of applicability, acceptance, and benefits in patients with HF, both in terms of patients themselves as well as health professionals. For this purpose, a sample of 41 patients with HF, average age 58.2 years and a sample of 9 health care providers specializing in HF was used. According to the results, the benefits of the patients from this nursing intervention included the enhanced communication with the health professional and his family members, increased confidence in conducting an honest and meaningful discussion with the health care provider and the constant renewal and upgrading his knowledge of HF [35]. At the same time, the benefits of health professionals from this intervention were the facilitation of the discussion with the patient and the learning of new information about the goals and values of the patient. Therefore, goal-setting intervention provides a way to align patient's goals and values with advanced HF treatment options, with the ultimate goal of improving QOL and reducing patient care costs [35].

Bernocchi et al. [36] conducted a multicenter, open, controlled randomized study to evaluate the effectiveness of a comprehensive 4-month Telerehabilitation Home - Based Program (Tereab - HBP) in patients with HF and COPD, at the same time. The sample consisted of 112 patients, who were randomly divided into two groups. One group (54 people) was the control group, while the second group was the intervention group and received the Telereab - HBP intervention, which included remote monitoring of cardio respiratory parameters, weekly telephone calls from nurses, from which they received information on the symptoms and condition of the disease, but also advice on diet, medication and lifestyle of patients. Outcome measures evaluated were exercise endurance

through the 6-Min Walk Test (6MWT), QOL through the CAT (COPD Assessment Test) and MLHFQ (Minnesota Living with Heart Failure Questionnaire), physical activity/ability through the PASE ("Physical Activity Profile") tool, dyspnea through the MRC ("Medical Research Council"), disability through the Barthel tool, and chronological incidents such as death and hospitalization of patients [36]. All these measures were evaluated at the beginning of the study, after 4 months, and after 6 months, i.e. 2 months after the intervention was completed. Based on the results, after a period of 4 months, the patients in the intervention group were able to walk more than initially, while in the control group, no significant improvement in gait was observed. Patients' QOL ( $p$  value = 0 in the CAT tool,  $p$  value = 0.0007 in the MLHFQ tool), as well as dyspnea ( $p$  value = 0.05), disability ( $p$  value = 0.0006) and physical activity/ability ( $p$  value = 0.0015), improved significantly, only in the group receiving the nursing intervention, while the average time for hospitalization or death was longer in the case of the intervention group (113.4 days vs. 104, 7 in the control group). Overall, the 4-month Telereab - HBP nursing intervention is an effective and feasible program for patients with CHF and COPD [36].

The aim of the Ng & Wong Controlled Randomized Study (2018) was to examine the effect of a Home-Based Palliative Heart Failure (HPHF) program on HF, on functional status/ability/activity, in the burden of symptoms, in patient satisfaction and in the burden of caregivers between patients with end-stage HF. For this purpose, a total of 84 patients with end-stage HF were collected from 3 different hospitals and these patients were divided into two subgroups: The control group and the intervention group. In the control group, participants received counseling palliative care and routine planning that includes patients' duties and care needs after discharge from the hospital. In the intervention group, patients with HF received the care and advice received by the control group and, in addition, received a structured schedule of regular home visits or telephone calls from nurses, lasting a total of 12 months [37]. The collection of the necessary data took place at the beginning, 4, 12 weeks and one year after the start of the intervention. Based on the results, there was a statistically significant difference in the effects between the two groups, with the intervention group showing a significant improvement in QOL from the control group ( $p = 0.016$ ), while, at the same time, there was a significant effect of interaction between group and time ( $p = 0.032$ ). In contrast, there were no significant differences in effects between the two groups in terms of symptoms and functional status/ability/activity over a 12-week period. Finally, the intervention group showed significantly higher levels of satisfaction ( $p = 0.001$ ) and significantly lower caregiver workload ( $p = 0.024$ ) than the control group over a total period of 3 months. Overall, the HPHF program is particularly effective in improving the IQ of patients with end-stage HF, increasing patient satisfaction with care, and caring for careers [37].

Abbasi et al. [38] conducted a non-randomized controlled study to compare the effects of a training program, self-management in QOL among patients with chronic HF. The total number of participants was 111 patients with chronic HF, who were divided into 3 subgroups: The control group (38 participants), the multimedia group (37 participants) and the multivariate group (36 participants). According to the results, statistically significant differences were observed between the groups of multimedia and multiple methods in terms of QOL, after the intervention, compared to the control group ( $p < 0.001$  and  $p = 0.002$ , respectively) [38]. Statistically significant differences

were also observed between the two groups of interventions in terms of knowledge dimension and self-efficacy ( $p=0.047$ ), the educational program proposed in this research seems to significantly improve the QOL of patients with KA and especially the multi-method approach seems to be more effective than the multimedia method [38].

## Discussion

From the present SR at a first glance it seems clear in terms of extracting positive results for the effectiveness of remote management and the non-pharmacological approach of patients with HF. Most studies have well-established remote approach practices that do not differ much from each other. In particular, after the patient leaves the hospital, his complete history is enriched with his updated contact details, the available means of communication, to which he has full and daily or weekly access and receives the necessary printed or electronic material, with which he will start his outpatient education and consequently his outpatient nursing, counseling intervention. Despite their relative methodological homogeneity and the use of remarkable and weighted assessment tools for measuring health-related QOL, knowledge of the background of HF as a chronic disease, self-management, self-preservation, self-care of patients with HF, it is worth mentioning that through the studies, which were reviewed, homogeneous socio-demographic data are not presented. Therefore, even when they were listed, they were not recorded in order to ensure the homogeneity, usability and comparability of the listed qualitative characteristics of the studies. Most researchers emphasize that in order to successfully complete the intervention, either through home visits or telephone sessions, it is very important to mobilize the patient in advance and inform him about the parameters of the disease he is facing. The relevant education must take place in the presence of his family and it is equally legitimate for them to be informed with absolute clarity about their special role in educating, empowering, strengthening and mobilizing the patient.

None of the studies reviewed regarding the evaluation of the effectiveness of outpatient and non-pharmacological management of the patient with HF reported moderate or negative results. On the contrary, all studies underline the absolute importance of these interventions in the mobilization, functionality, autonomy, self-preservation and spiritual euphoria of the patient. It follows, therefore, from the above interventions:

- In the organized and coordinated context in which they are carried out
- In the advanced professional know-how, specialization, experience of the specialized nurses, who undertake the implementation of this project and
- In the successful cooperation of the whole interdisciplinary team, they are applied with absolute success, causing only positive results in the management of HF disease by the patient and his close family environment, his caregivers.

However, the results of the studies differ in the magnitude of the patient's functionality or autonomy during or at the formal end of the outpatient management program. In addition, few of the studies reviewed are able to provide long-term results, as in most cases follow-up is not prospective; of the studies reviewed, only the publication of Clark et al. [39] showed positive results (state of health and self-preservation, self-management, self-efficacy, QOL, memory, self-confidence, reduction of depression and enhanced knowledge

about HF), 9 months later the completion of the nursing counseling management program and after the final termination of the patient-nurse contact.

An issue, which is underlined by the studies that fall under this SR, is the necessary training and specialization that nurses must have, as health professionals, who undertake under medical guidance to implement a management program, counseling patients with HF. In particular, as pointed out by many studies, the know-how and academic background of nurses must be on par with the increased demands of an advanced remote counseling, mentoring support program. Targeted and specialized basic, but also continuing education and training of nurses in the direction of this goal is a necessary condition.

Non-pharmacological management programs with counseling nursing intervention for patients with HF focus on encouraging the adoption of self-care behaviors by the patient. As found by the SR, they are usually educational in nature and are intended to help the patient understand the importance of compliance with medication, diet and other restrictions, enhancing risk modification and lifestyle changes, and the value of exercise in their daily life and in addition in their ability to recognize the symptoms of worsening of the disease and to seek timely health care.

The interventions are made as shown by the literature coordinated and individualized by an interdisciplinary team of experts. Particular emphasis is given to the majority of HF management programs by a medical and nursing team. In many chronic HF disease management programs, the health care professional acts as a link between the HF patient and an interdisciplinary team or coordinates the team.

## Conclusion

It follows from the present conducted SR that with the implementation of non-pharmacological management programs for patients with HF, programs, which are led by nurses, are associated with positive results in improving the self-management of the syndrome, self-maintenance, self-care, autonomy, empowerment, but there are no equally, the same positive results, no statistically significant improvement was found in the health-related QOL of patients with HF. While there is an improvement in physical, physical functional capacity-dimension, as well as in mental-cognitive function, there is no corresponding improvement in the mental dimension of QOL, in the overall score of QOL and especially in the female population-sample of studies included in SR. There is complexity, diversity of these programs, both to determine the type of intervention by counseling/educational nursing, and the time, duration of the intervention, the intensity, the content of the management programs, as well as the duration of the follow up, but also in the establishment of the group of health professionals, a fact for which the scientific community is unable to accurately identify the characteristics of an effective program, in order to reduce the effects of the syndrome and improve the QOL of patients.

This demonstrates the need for further research, additional studies are needed, which will begin with the key stratification of patients' risk at the patient's exit, on his or her transition from hospital to home. The collection of clinical and laboratory data, together with a well-completed information note from the treating physician and with consulting nursing intervention, as well as with a holistic interdisciplinary approach, the phase of transition from hospital to home, which is the most vulnerable period for the

patient with HF, with an increased risk of death, especially in the first weeks after discharge. Further studies are needed to evaluate the results of the non-pharmacological management of patients with HF in health related to time, duration of follow-up, establishment of the interdisciplinary team, intensity and content of management programs to document the of these programs.

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