

The Effect of Discharge Planning Videos and Booklets on the Quality of Life among Heart Failure Patients: A Quasi-experimental Study

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Table of Contents

Original Manuscript.....	4
---------------------------------	----------

Preprint
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The Effect of Discharge Planning Videos and Booklets on the Quality of Life among Heart Failure Patients: A Quasi-experimental Study

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Abstract

Background: Heart failure remains a major global health issue, significantly impacting patients' quality of life due to its chronic and progressive nature. Effective discharge planning, including educational interventions such as videos and booklets, plays a crucial role in enhancing self-care management and overall patient well-being.

Objective: This study aims to measure the effects of discharge planning videos and booklets on the quality of life among heart failure patients.

Methods: This study employed a quasi-experimental and was conducted at PKU Muhammadiyah Gamping Hospital from July to November 2024. A total of 42 participants who met the inclusion criteria were selected based on sample size calculations using G*Power and were evenly assigned to intervention and control groups. Discharge planning videos and booklets were developed as educational tools for the intervention group. The independent sample t-test was used to analyze the effect of the intervention, utilizing SPSS version 29.

Results: The intervention significantly improved the quality of life in heart failure patients, with the mean score decreasing from 39.00 ± 8.11 to 24.76 ± 4.02 ($p = 0.000$) in the intervention group. In contrast, the control group showed minimal change from 39.90 ± 5.89 to 40.24 ± 5.84 , resulting in a statistically significant between-group difference of 15.58 ($p = 0.000$).

Conclusions: Discharge planning through videos and booklets significantly improved the quality of life among heart failure patients compared to standard care. These findings emphasize the clinical importance of structured patient education, suggesting that multimedia and printed materials can enhance self-management and overall well-being.

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Original Manuscript

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Keywords: discharge planning; heart failure; patient-centered care; quality of life; video

Introduction

Heart failure is a chronic and progressive condition that significantly impairs the quality of life (QoL) of patients globally. Characterized by the heart's inability to pump blood efficiently, it manifests through symptoms such as shortness of breath, fatigue, and fluid retention. Despite advancements in medical treatments, heart failure remains a leading cause of hospitalization and mortality, imposing a substantial burden on healthcare systems and patients alike [1-3]. In Indonesia, heart failure is among the top 10 non-communicable diseases, with 229,696 (0.13%) patients diagnosed with the condition. Additionally, based on doctor's diagnoses or symptoms, the prevalence of heart failure in Indonesia is estimated at 1.5%, affecting approximately 2,650,340 individuals [4]. These alarming statistics highlight the urgent need for effective management strategies to mitigate the growing burden of heart failure.

The management of heart failure is multifaceted, requiring not only pharmacological interventions but also comprehensive patient education and self-care strategies [5,6]. Unhealthy lifestyles and the inability of patients to independently manage their condition are significant contributors to the rising incidence of heart failure. Addressing these factors necessitates a focus on enhancing self-management among heart failure patients. In this context, discharge planning emerges as a critical component in ensuring that patients are equipped with the necessary knowledge and skills to manage their condition effectively after leaving the hospital [7,8].

Discharge planning is a multidisciplinary process designed to facilitate the transition of patients from hospital to home, thereby reducing the risk of readmission and improving overall health outcomes. It involves the coordination of care, patient education, and the provision of resources to support self-management [7]. Numerous studies have underscored the importance of discharge planning in improving health outcomes for heart failure patients. For instance, Rice, Say, and Betihavas (2018) demonstrated that comprehensive discharge planning and post-discharge support significantly enhance health outcomes, potentially improving patients' quality of life through better education and resources [9]. Similarly, Graupner et al. (2021) found that structured discharge planning interventions led to improved outcomes, including enhanced quality of life, increased knowledge related to heart failure, improved self-care behaviors, and reduced readmission rates [10]. These findings underscore the critical role of well-designed discharge planning programs in addressing the multifaceted challenges faced by heart failure patients.

Patient education is a cornerstone of effective heart failure management. Empowering patients with the knowledge and skills to actively participate in their care can lead to better adherence to treatment regimens, improved symptom management, and reduced hospital readmissions [11-13]. However, many patients face challenges such as low health literacy, cognitive impairments, or language barriers, which can hinder their ability to understand and apply the information provided. Additionally, the emotional and psychological burden of living with a chronic condition like heart failure can further complicate the educational process [14,15].

In recent years, the advent of digital technology has opened new avenues for enhancing patient education and engagement [16]. Multimedia tools, such as videos, offer a promising solution by presenting information in a clear, concise, and visually appealing manner. Videos can be tailored to address the specific needs and preferences of individual patients, making the content more relevant and effective [17-19]. For example, videos can demonstrate proper techniques for monitoring blood pressure, taking medications, or performing physical exercises, providing patients with practical guidance that they can easily follow at home. Moreover, videos can be accessed repeatedly, allowing patients to review the information as needed, which reinforces learning and promotes long-term retention [20-22].

While videos offer a dynamic and engaging medium for patient education, booklets remain a valuable complementary tool. Booklets provide a written reference that patients can consult at their own pace, offering detailed information on various aspects of heart failure management, such as dietary recommendations, medication schedules, and warning signs of worsening symptoms [23,24]. They can also include diagrams, charts, and checklists to facilitate understanding and application of the information. Furthermore, booklets can be customized to reflect the cultural and linguistic diversity of the patient population, ensuring that the content is accessible and relevant to all [25-27]. The integration of videos and booklets in discharge planning may offer a synergistic effect, enhancing the overall quality of patient education. Videos can capture the patient's attention and convey key messages in an engaging manner, while booklets provide a comprehensive resource for additional details and clarification [28,29]. Together, these tools address the cognitive, emotional, and practical aspects of patient education, promoting a more holistic approach to self-care.

Objective

This quasi-experimental research aims to evaluate the effect of discharge planning interventions using educational videos and booklets on the quality of life among heart failure patients.

Methods

Design and setting

The study employed a quasi-experimental design and was conducted at PKU Muhammadiyah Gamping Hospital from July to November 2024.

Population and sample

The study population consisted of heart failure patients hospitalized at PKU Muhammadiyah Gamping Hospital. The sample size was determined using G*Power software version 3.1, applying a t-test for independent means (two groups) with a significance level of 0.05, statistical power of 0.80 (80%), and an effect size of 0.80 (large) [30,31]. This calculation resulted in a total sample of 42 respondents, divided into two groups: 21 in the intervention group and 21 in the control group.

The inclusion criteria encompassed heart failure patients classified as grade 1 or 2 who consented to participate, were over 20 years old, and could read and write. Additionally, patients who owned a smartphone were included. The exclusion criteria covered patients who passed away, were readmitted to the hospital within less than a month, or had more than three comorbid diagnoses.

Intervention

The intervention in this study involved discharge planning delivered through educational videos and booklets as supportive media to enhance heart failure patients' understanding of self-care management after hospital discharge. Both the intervention and control groups received standard discharge planning services from healthcare professionals. However, the intervention group received additional education in the form of videos and booklets to reinforce patient comprehension.

The educational video, lasting 4 minutes and 27 seconds, provided comprehensive information about heart failure, including its definition, signs and symptoms, risk factors, dietary recommendations, and home care management. This video was accessible via YouTube at <https://www.youtube.com/watch?v=oYrOHsPA5ZA>, allowing patients and their families to access it flexibly according to their needs. Additionally, an educational booklet, available as *Multimedia Appendix 1*, served as a written guide for reference during the home recovery period. Both educational tools underwent validation by cardiology ward nurses and cardiologists, ensuring that the provided material met clinical standards and addressed the specific needs of heart failure patients.

Instrument and measurement

The instrument used in this study was the Minnesota Living With Heart Failure Questionnaire (MLHFQ), which assesses the quality of life in heart failure patients based on four dimensions: physical, mental, emotional, and social. This questionnaire employs a Likert scale (1 = Never, 2 = Rarely, 3 = Often, 4 = Always) with a total score ranging from 24 to 80. The interpretation of quality of life scores is categorized as follows: <24 (good), 24–45 (moderate), and >45 (poor). The Indonesian version of the MLHFQ has been widely validated, demonstrating excellent reliability with a Cronbach's alpha of 0.954. Validity testing revealed that one item (question number 10) had an r value <0.3, failing to meet homogeneity criteria and was thus excluded from the questionnaire. Consequently, the final version used in this study consisted of 20 items [32,33].

Data collection and analysis

The measurement of heart failure patients' quality of life was conducted in two phases: before the intervention (pre-test) and at follow-up (post-test) four weeks after the intervention. The data analysis in this study employed parametric statistical methods, as the data were normally distributed based on the Shapiro-Wilk test (*Appendix 2*). A paired t-test was used to evaluate mean differences within the same group before and after the intervention, while an independent t-test was applied to compare mean differences between two groups in both pre-test and post-test conditions. All data analyses were conducted using SPSS Software version 29.

Results

Sociodemographic of the participant

Table 1 presents the sociodemographic characteristics of participants ($n=42$) in the intervention and control groups. The mean age was 62.8 ± 12.3 years in the intervention group and 60.7 ± 15.7 years in the control group. Males constituted 71.4% and 57.1% of the intervention and control groups, respectively. In terms of education, primary education was the most common (23.8% vs. 47.6%), with smaller proportions attaining secondary, tertiary, or university-level education. Regarding occupation, 61.9% of the intervention group was employed compared to 47.6% in the control group. All variables had p -values > 0.05, indicating no statistically significant differences between groups. This suggests comparable sociodemographic distributions, minimizing the potential for confounding effects in the study.

Table 1. Sociodemographic of the participant

Variables	Group				p-value ^a
	Intervention		Control		
	f	%	f	%	
Age	62.8 ^b	12.3 ^c	60.7 ^b	15.7 ^c	0.281*
< mean	9	42.9	10	47.6	
≥ mean	12	57.1	11	52.4	
Sex					0.840*
Male	15	71.4	12	57.1	
Female	6	28.6	9	42.9	
Education					0.672*
Primary	5	23.8	10	47.6	
Secoundary	2	9.5	2	9.5	
Tertiary	10	47.6	8	38.1	
University	4	19.0	1	4.8	
Occupation					0.309*
Employed	13	61.9	10	47.6	
Unemployed	8	38.1	11	52.4	

^aHomogeneity test by Saphiro-Wilk^bmean score^cstandard deviation

*significant > 0.05

The effect of intervention on the quality of life among heart failure patients

Table 2. The effect of intervention on the quality of life among heart failure patients

Analysis	Parameters	Group	
		Intervention	Control
The effect of intervention on quality of life	Pre-test (mean ± SD)	39.00 ± 8.11	39.90 ± 5.89
	Post-test (mean ± SD)	24.76 ± 4.02	40.24 ± 5.84
	Significance ^a	0.000*	0.031**
	Mean Difference	15.58	
	Significance ^b	0.000*	

^apaired t-test^bindependent sample t-test

* Significant <0.001

** Significant < 0.05

Table 2 illustrates the effects of the intervention on the quality of life in patients with heart failure, comparing the intervention and control groups. Prior to the intervention, the mean quality of life score was 39.00 ± 8.11 in the intervention group and 39.90 ± 5.89 in the control group. Following the intervention, the mean score in the intervention group significantly decreased to 24.76 ± 4.02, whereas the control group exhibited minimal change, with a post-intervention score of 40.24 ± 5.84. Statistical analysis using the paired t-test demonstrated a significant improvement in the intervention group ($p = 0.000$), while the change observed in the control group was also statistically significant but with a lower level of significance ($p = 0.031$). Furthermore, the post-intervention mean difference between the two groups was 15.58, which was statistically significant ($p = 0.000$) based on the independent

sample t-test. These findings indicate that discharge planning video and booklets led to a substantial improvement in the quality of life among heart failure patients compared to the control group, highlighting its potential effectiveness in clinical settings.

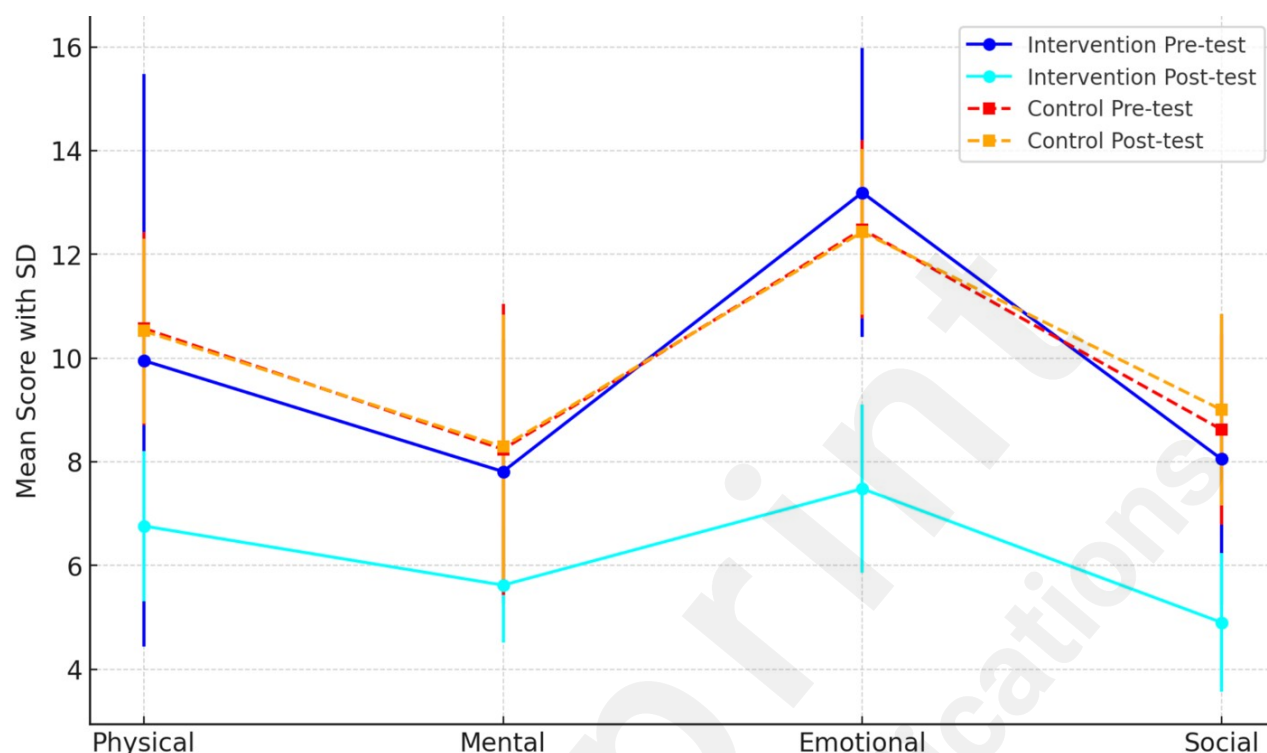


Figure 1. Comparison of Mean Scores and SD between two groups

Figure 1 illustrate the mean scores and standard deviations of the MLHFQ across four domains—physical, mental, emotional, and social—measured before and after the intervention in both the intervention and control groups. The intervention group exhibited a marked improvement across all domains, as indicated by a decrease in mean scores post-test.

In the physical health domain, the intervention group demonstrated a substantial reduction in mean scores from 9.95 ± 5.519 to 6.76 ± 1.446 , whereas the control group showed minimal change from 10.57 ± 1.859 to 10.52 ± 1.778 . Similarly, mental health scores in the intervention group declined from 7.81 ± 2.552 to 5.62 ± 1.117 , while the control group remained nearly unchanged at $8.24 (\pm 2.809)$ to $8.29 (\pm 2.552)$. Emotional well-being improved significantly in the intervention group, with scores decreasing from 13.19 ± 2.786 to 7.48 ± 1.632 , whereas the control group exhibited only a slight reduction from 12.48 ± 1.721 to 12.43 ± 1.599 . Furthermore, social functioning in the intervention group improved markedly, as evidenced by a reduction in scores from 8.05 ± 2.801 to 4.90 ± 1.338 , while the control group experienced a slight increase from 8.62 ± 1.830 to 9.00 ± 1.844 . These findings suggest that the intervention effectively enhanced various aspects of quality of life, particularly in reducing the burden of physical, mental, emotional, and social impairments. In contrast, the control group showed little to no improvement across these domains, highlighting the potential efficacy of the intervention in improving patient-reported outcomes.

Discussion

The results of this study demonstrated a statistically significant improvement in the quality of life (QoL) among heart failure patients who received discharge planning interventions involving educational videos and booklets, as evidenced by the independent

sample t-test ($p = 0.000$). This significant difference underscores the effectiveness of these multimedia tools in enhancing patients' understanding of self-care, promoting adherence to management strategies, and ultimately improving their overall QoL compared to the control group. The findings suggest that integrating videos and booklets into discharge planning can serve as a valuable approach in clinical settings, offering a practical and accessible means to empower patients and address the multifaceted challenges of heart failure management [34,35]. These results align with previous research emphasizing the importance of structured patient education and support in improving health outcomes, further validating the potential of such interventions to reduce the burden of heart failure and enhance patients' well-being [36,37].

The use of educational videos in discharge planning likely contributed to the observed improvements by presenting complex medical information in a clear, engaging, and visually appealing manner. Murphy L. et al. (2021) emphasized that the dynamic nature of videos allows for the inclusion of visual and auditory elements, which cater to different learning styles, making the information more accessible to a broader audience [38]. Similarly, Saluky and Bahiyah (2023) highlighted that the ability to revisit video content allows patients to reinforce comprehension, address areas of difficulty, and improve long-term retention of key information [39]. This aligns with studies highlighting the advantages of multimedia tools in overcoming barriers such as low health literacy, cognitive impairments, and language difficulties, which are common among heart failure patients. By addressing these barriers, videos can enhance patients' confidence and ability to manage their condition independently, ultimately leading to better health outcomes [40,41].

The inclusion of booklets in the intervention provided a complementary resource that allowed patients to access detailed written information at their convenience. Booklets serve as a reliable reference for patients, offering step-by-step guidance on dietary recommendations, exercise routines, and medication management [42-44]. This dual approach — combining the dynamic nature of videos with the comprehensive detail of booklets — likely created a synergistic effect, enhancing the overall impact of the discharge planning intervention. The combination of these tools addresses both the immediate and long-term educational needs of patients, providing them with the resources necessary to manage their condition effectively over time [45-48].

The significant improvement in QoL observed in this study also highlights the importance of addressing the emotional and psychological aspects of living with heart failure. Tsabedze N. et al. (2021) stated that depression and anxiety symptoms were found in over half of patients attending the CHF clinic, highlighting how chronic conditions like heart failure often lead to emotional distress and a sense of helplessness, which can hinder patients' ability to engage in self-care [49-50]. By providing clear, actionable information through videos and booklets, the intervention may have alleviated some of these emotional burdens, empowering patients to take control of their health. This is particularly important given the strong link between psychological well-being and adherence to treatment regimens. The positive outcomes observed in this study suggest that multimedia-based discharge planning can play a crucial role in fostering a sense of empowerment and resilience among heart failure patients [51-52].

Study implication

The findings of this study have important implications for healthcare systems, particularly in resource-limited settings. Heart failure is a global health challenge that places a significant burden on healthcare infrastructure, with high rates of hospitalization and readmission [53,54]. Effective discharge planning interventions, such as the use of videos and booklets, offer a cost-effective and scalable solution to improve patient outcomes and reduce

healthcare costs [55-58]. These tools can be easily disseminated and adapted to meet the needs of diverse patient populations, making them a viable option for widespread implementation. Additionally, the use of multimedia tools aligns with the growing trend of digital health solutions, which have the potential to revolutionize patient education and self-management. By leveraging technology, healthcare providers can deliver high-quality education to patients in a format that is both accessible and engaging [16,59].

Strength and limitation

One of the key strengths of this study lies in its innovative approach to discharge planning, which combines educational videos and booklets to address the diverse learning needs of heart failure patients. Additionally, the study adopts a holistic perspective, focusing not only on clinical outcomes but also on the emotional and psychological challenges faced by patients. This patient-centered design empowers individuals with knowledge and practical tools, promoting better self-care and overall quality of life. The intervention's scalability and accessibility further strengthen its potential, as videos and booklets are cost-effective and can be adapted to various healthcare settings, including resource-limited environments.

However, the study has several limitations. Its quasi-experimental design lacks the rigor of a randomized controlled trial (RC), limiting causal inferences. The focus on short-term outcomes with inadequate long-term follow-up raises concerns about the sustainability of improvements in quality of life and self-care. While scalable, implementation challenges remain in resource-limited settings due to constraints in technology and funding. Additionally, unaccounted external factors such as socioeconomic status, family support, and comorbidities may influence patient outcomes.

Conclusions

Discharge planning through videos and booklets was found to significantly enhance the quality of life in heart failure patients compared to standard care. The intervention effectively provided patients with essential knowledge and self-management skills, enabling them to better understand their condition and adhere to recommended lifestyle modifications. These findings highlight the clinical importance of structured patient education, suggesting that integrating multimedia and printed materials into discharge planning can improve patient engagement, promote adherence to treatment, and ultimately enhance overall well-being.

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Conflict of interest

The authors have no conflicts of interest to declare.

Ethical approval

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board at PKU Muhammadiyah Gamping Hospital, Indonesia (IRB number: 150/KEP-PKU/VII/2024).

Author contributions

Conceptualization, F.A.; Data curation, F.D.L.; Formal analysis, H.S.; Investigation, F.A. and F.D.L.; Supervision, F.A.; Writing the original draft, F.A. and F.D.L.; Writing the review & editing,

H.S. All authors read and agreed to the final version of the manuscript. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

References

1. Kularatna S, Jadambaa A, Hewage S, Brain D, McPhail S, Parsonage W. Global, regional, and national burden of heart failure associated with atrial fibrillation. *BMC Cardiovasc Disord.* 2023;23(1). doi:10.1186/s12872-023-03375-9
2. Ferreir JL, Kumar S, Soni A, Acharya N, Acharya S. Clinical Management of Cardiovascular Diseases. In: *Current Trends in the Diagnosis and Management of Metabolic Disorders.* ; 2023. doi:10.1201/9781003384823-15
3. Elendu C, Amaechi DC, Elendu TC, et al. A comprehensive review of heart failure: Unraveling the etiology, decoding pathophysiological mechanisms, navigating diagnostic modalities, exploring pharmacological interventions, advocating lifestyle modifications, and charting the horizon of emerging therapies in the complex landscape of chronic cardiac dysfunction. *Medicine (United States).* 2024;103(3). doi:10.1097/MD.00000000000036895
4. Nursita H, Pratiwi A. Peningkatan Kualitas Hidup Pada Pasien Gagal Jantung: A Narrative Review Article. *Jurnal Berita Ilmu Keperawatan.* 2020;13(1).
5. Jaarsma T, Hill L, Bayes-Genis A, et al. Self-care of heart failure patients: practical management recommendations from the Heart Failure Association of the European Society of Cardiology. *Eur J Heart Fail.* 2021;23(1). doi:10.1002/ejhf.2008
6. Butler J, Petrie MC, Bains M, et al. Challenges and opportunities for increasing patient involvement in heart failure self-care programs and self-care in the post-hospital discharge period. *Res Involv Engagem.* 2023;9(1). doi:10.1186/s40900-023-00412-x
7. Abouzid MR, Siddiqi M. Discharge planning and resource utilization for minimizing readmissions in acute exacerbation of chronic heart failure: Insights from an observational study in a community hospital. *Curr Probl Cardiol.* 2024;49(2). doi:10.1016/j.cpcardiol.2023.102197
8. Davisson E, Swanson E. Nurses' heart failure discharge planning part II: Implications for the hospital system. *Applied Nursing Research.* 2020;56. doi:10.1016/j.apnr.2020.151336
9. Rice H, Say R, Betihavas V. The effect of nurse-led education on hospitalisation, readmission, quality of life and cost in adults with heart failure. A systematic review. *Patient Educ Couns.* 2018;101(3). doi:10.1016/j.pec.2017.10.002
10. Graupner C, Kimman ML, Mul S, et al. Patient outcomes, patient experiences and process indicators associated with the routine use of patient-reported outcome measures (PROMs) in cancer care: a systematic review. *Supportive Care in Cancer.* 2021;29(2). doi:10.1007/s00520-020-05695-4
11. Adinkrah E. Patient Education in Chronic Disease Management. *Physician Assist Clin.* 2024;9(4). doi:10.1016/j.cpha.2024.05.005
12. Unverzagt S, Meyer G, Mittmann S, Samos FA, Unverzagt M, Prondzinsky R. Improving Treatment Adherence in Heart Failure: A Systematic Review and Meta-analysis of Pharmacological and Lifestyle Interventions. *Dtsch Arztebl Int.* 2016;113(25).
13. Morley CM, Levin SA. Health Literacy, Health Confidence, and Simulation: A Novel Approach to Patient Education to Reduce Readmissions. *Prof Case Manag.* 2021;26(3). doi:10.1097/NCM.0000000000000456
14. Heijmans M, Waverijn G, Rademakers J, van der Vaart R, Rijken M. Functional, communicative and critical health literacy of chronic disease patients and their importance for self-management. *Patient Educ Couns.* 2015;98(1). doi:10.1016/j.pec.2014.10.006
15. Hersh L, Salzman B, Snyderman D. Health literacy in primary care practice. *Am Fam Physician.* 2015;92(2).
16. Setiawan H, Xu W, Wang C, et al. The effect of mobile application based genetic counseling on

- the psychosocial well-being of thalassemia patients and caregivers: A randomized controlled trial. *Patient Educ Couns*. 2025;130(108457):1-9. doi:<https://doi.org/10.1016/j.pec.2024.108457>
17. Tom K, Phang PT. Effectiveness of the video medium to supplement preoperative patient education: A systematic review of the literature. *Patient Educ Couns*. 2022;105(7). doi:10.1016/j.pec.2022.01.013
 18. Vandelanotte C, Short C, Plotnikoff RC, et al. TaylorActive - Examining the effectiveness of web-based personally-tailored videos to increase physical activity: a randomised controlled trial protocol. *BMC Public Health*. 2015;15(1). doi:10.1186/s12889-015-2363-4
 19. Khalil C, van Deen W, Dupuy T, Bonthala N, Almario C, Spiegel B. Developing patient-centered inflammatory bowel disease-related educational videos optimized for social media: Qualitative research study. *JMIR Med Educ*. 2020;6(2). doi:10.2196/21639
 20. McDonough DJ, Helgeson MA, Liu W, Gao Z. Effects of a remote, YouTube-delivered exercise intervention on young adults' physical activity, sedentary behavior, and sleep during the COVID-19 pandemic: Randomized controlled trial. *J Sport Health Sci*. 2022;11(2). doi:10.1016/j.jshs.2021.07.009
 21. Fiallos A, Fiallos C, Figueroa S. Tiktok and education: Discovering knowledge through learning videos. In: *2021 8th International Conference on EDemocracy and EGovernment, ICEDEG 2021*. ; 2021. doi:10.1109/ICEDEG52154.2021.9530988
 22. McManus RJ, Little P, Stuart B, et al. Home and Online Management and Evaluation of Blood Pressure (HOME BP) using a digital intervention in poorly controlled hypertension: Randomised controlled trial. *The BMJ*. 2021;372. doi:10.1136/bmj.m4858
 23. Morrison AK, Glick A, Shonna Yin H. Health literacy: Implications for child health. *Pediatr Rev*. 2019;40(5). doi:10.1542/pir.2018-0027
 24. Montagnese C, Santarpia L, Iavarone F, et al. Food-Based dietary guidelines around the World: Eastern Mediterranean and Middle Eastern Countries. *Nutrients*. 2019;11(6). doi:10.3390/nu11061325
 25. Keinki C, Rudolph I, Ruetters D, et al. The Quality of Patient Information Booklets for Cancer Patients—an Evaluation of Free Accessible Material in German Language. *Journal of Cancer Education*. 2018;33(5). doi:10.1007/s13187-017-1224-5
 26. King-Shier K, Lau A, Fung S, LeBlanc P, Johal S. Ethnocultural influences in how people prefer to obtain and receive health information. *J Clin Nurs*. 2018;27(7-8). doi:10.1111/jocn.14281
 27. Lambert S, Loban E, Li J, et al. Chronic Illness Management in Culturally and Linguistically Diverse Patients: Exploring the Needs, Access, and Understanding of Information. *Qual Health Res*. 2021;31(13). doi:10.1177/10497323211040769
 28. Wild CF, Nietzsche EA, Salbego C, Teixeira E, Favero NB. Validation of educational booklet: an educational technology in dengue prevention. *Rev Bras Enferm*. 2019;72(5). doi:10.1590/0034-7167-2018-0771
 29. Feeley TH, Keller M, Kayler L. Using Animated Videos to Increase Patient Knowledge: A Meta-Analytic Review. *Health Education and Behavior*. 2023;50(2). doi:10.1177/10901981221116791
 30. ÜNALAN A. Sample Size in Clinical Researches: Power of the Test and Effect Size. *Black Sea Journal of Health Science*. 2021;4(3). doi:10.19127/bshealthscience.866556
 31. Chanuan U, Kajohnsak C, Nittaya S. Sample Size Estimation using Yamane and Cochran and Krejcie and Morgan and Green Formulas and Cohen Statistical Power Analysis by G*Power and Comparisons. *Apheit International Journal*. 2021;10(2).
 32. Middel B, Bouma J, De Jongste M, et al. Psychometric properties of the Minnesota Living with Heart Failure Questionnaire (MLHF-Q). *Clin Rehabil*. 2001;15(5). doi:10.1191/026921501680425216
 33. Rahmani S, Erwinanto, Andean R. Correlation between Six-Minutes' Walk Test and Quality of Life in Heart Failure Patients. *Althea Medical Journal*. 2015;2(4). doi:10.15850/amj.v2n4.629

34. Rad M, Ghanbari-Afra L, Hoseini M, Afra M, Asayesh H. Effectiveness of self-care program on the quality of life in patients with coronary artery disease undergoing cardiac rehabilitation: A Randomized clinical trial. *J Educ Health Promot.* 2021;10(1). doi:10.4103/jehp.jehp-70-21
35. Deshpande N, Wu M, Kelly C, et al. Video-Based Educational Interventions for Patients With Chronic Illnesses: Systematic Review. *J Med Internet Res.* 2023;25. doi:10.2196/41092
36. Sheehan J, Laver K, Bhojti A, et al. Methods and effectiveness of communication between hospital allied health and primary care practitioners: A systematic narrative review. *J Multidiscip Healthc.* 2021;14. doi:10.2147/JMDH.S295549
37. Su JJ, Yu DS fung. Effects of a nurse-led eHealth cardiac rehabilitation programme on health outcomes of patients with coronary heart disease: A randomised controlled trial. *Int J Nurs Stud.* 2021;122. doi:10.1016/j.ijnurstu.2021.104040
38. Murphy L, Moore S, Swan J, Hehir D, Ryan J. Examining the impact of video-based outpatient education on patient demand for a rheumatology CNS service. *British Journal of Nursing.* 2021;30(18). doi:10.12968/bjon.2021.30.18.1056
39. Saluky, Nurul Bahiyah. Revolutionizing Education: Unlocking the Potential of Asynchronous Video for Interactive Online Learning. *International Journal of Education and Humanities.* 2023;3(2). doi:10.58557/(ijeh).v3i2.149
40. Taylor ML, Thomas EE, Vitangcol K, et al. Digital health experiences reported in chronic disease management: An umbrella review of qualitative studies. *J Telemed Telecare.* 2022;28(10). doi:10.1177/1357633X221119620
41. Chatterjee A, Strong G, Meinert E, Milne-Ives M, Halkes M, Wyatt-Haines E. The use of video for patient information and education: A scoping review of the variability and effectiveness of interventions. *Patient Educ Couns.* 2021;104(9). doi:10.1016/j.pec.2021.02.009
42. Silva Caetano IRC, Santiago LM, Marques M. Impact of written information on control and adherence in type 2 diabetes. *Rev Assoc Med Bras.* 2018;64(2). doi:10.1590/1806-9282.64.02.140
43. Linton DN, Porteous J, Eatson H, et al. Educational booklet reinforces knowledge of osteoporosis and influences intentions to improve bone health in previously diagnosed and treated patients. *Osteoporosis International.* 2020;31(9). doi:10.1007/s00198-020-05392-2
44. Piredda M, Migliozi A, Biagioli V, Carassiti M, De Marinis MG. Written information improves patient knowledge about implanted ports. *Clin J Oncol Nurs.* 2016;20(2). doi:10.1188/16.CJON.E28-E33
45. Laparidou D, Botan V, Law GR, et al. People with diabetes and ambulance staff perceptions of a booklet-based intervention for diabetic hypoglycaemia, "Hypos can strike twice": a mixed methods process evaluation. *BMC Emerg Med.* 2022;22(1). doi:10.1186/s12873-022-00583-y
46. Reda Abdou H, Sleem WF, EL-Wkeel NS. Designing and Validating Educational Booklet about Self-Directed Learning for Nursing Students. *International Journal of Nursing.* 2021;8(1). doi:10.15640/ijn.v8n1a3
47. Navarro O, Escrivá M, Faubel R, Traver V. Empowering patients living with chronic conditions using video as an educational tool: Scoping review. *J Med Internet Res.* 2021;23(7). doi:10.2196/26427
48. Reid KRY, Reid K, Esquivel JH, et al. Using video education to improve outcomes in heart failure. *Heart and Lung.* 2019;48(5). doi:10.1016/j.hrtlng.2019.05.004
49. Guidotti E, Pennucci F, Valleggi A, De Rosis S, Passino C. A longitudinal assessment of chronic care pathways in real-life: self-care and outcomes of chronic heart failure patients in Tuscany. *BMC Health Serv Res.* 2022;22(1). doi:10.1186/s12913-022-08522-0
50. Tsabedze N, Kinsey JLH, Mpanya D, Mogashoa V, Klug E, Manga P. The prevalence of depression, stress and anxiety symptoms in patients with chronic heart failure. *Int J Ment Health Syst.* 2021;15(1). doi:10.1186/s13033-021-00467-x
51. Owusu E, Shalaby R, Elgendy H, et al. Comparison of Resilience, Personal Recovery, and

- Quality of Life Measures Pre- and Post-Discharge from Inpatient Mental Health Units in Alberta: Analysis of Control Group Data from a Randomized Trial. *Healthcare (Switzerland)*. 2023;11(22). doi:10.3390/healthcare11222958
52. Lee J, Seo E, Choi J, Min J. Effects of patient participation in the management of daily nursing goals on function recovery and resilience in surgical patients. *J Clin Nurs*. 2018;27(13-14). doi:10.1111/jocn.14302
53. Roger VL. Epidemiology of Heart Failure: A Contemporary Perspective. *Circ Res*. 2021;128(10). doi:10.1161/CIRCRESAHA.121.318172
54. Shahim B, Kapelios CJ, Savarese G, Lund LH. Global Public Health Burden of Heart Failure: An Updated Review. *Card Fail Rev*. 2023;9. doi:10.15420/cfr.2023.05
55. Angkurawaranon C, Papachristou Nadal I, Mallinson PAC, et al. Scalable solution for delivery of diabetes self-management education in Thailand (DSME-T): A cluster randomised trial study protocol. *BMJ Open*. 2020;10(10). doi:10.1136/bmjopen-2020-036963
56. Volandes AE, Paasche-Orlow MK, Davis AD, Eubanks R, El-Jawahri A, Seitz R. Use of Video Decision Aids to Promote Advance Care Planning in Hilo, Hawai'i. *J Gen Intern Med*. 2016;31(9). doi:10.1007/s11606-016-3730-2
57. Kyaw TL, Ng N, Theocharaki M, Wennberg P, Sahlen KG. Cost-effectiveness of Digital Tools for Behavior Change Interventions Among People With Chronic Diseases: Systematic Review. *Interact J Med Res*. 2023;12. doi:10.2196/42396
58. Adam M, McMahon SA, Prober C, Bärnighausen T. Human-centered design of video-based health education: An iterative, collaborative, community-based approach. *J Med Internet Res*. 2019;21(1). doi:10.2196/12128
59. Setiawan H, Setiawan D, Suhanda S, Mustopa AH. Development of Android-based Mobile Application "Cyber Gen" for Genetic Counselling Implementation among Thalassemia Patients. *J Phys Conf Ser*. 2021;2111(1). doi:10.1088/1742-6596/2111/1/012037