

SYSTEMATIC REVIEW SİSTEMATİK DERLEME

Yazışma adresi
Correspondence address

Ayşenur DAYAN
Antalya Bilim University,
Faculty of Health Sciences
Nursing Department,
Antalya, Türkiye

aysenur.dayan@antalya.edu.tr

Bu makalede yapılacak atıf
Cite this article as

Dayan A., Terzi B.
Examination of Experimental
Postgraduate Thesis Studies Conducted
with Care Bundles in The Field of
Nursing in Turkey: A Systematic Review

Akd Hemşirelik D 2025; 4(1): 39-50

 Ayşenur DAYAN
Antalya Bilim University,
Faculty of Health Sciences
Nursing Department,
Antalya, Türkiye

 Banu TERZİ
Akdeniz University,
Faculty of Nursing,
Fundamentals of Nursing Department
Antalya, Türkiye

Geliş tarihi / Received : 01 October 2024

Kabul Tarihi / Accepted : 21 February 2025

Examination of Experimental Postgraduate Thesis Studies Conducted with Care Bundles in The Field of Nursing in Türkiye: A Systematic Review

Türkiye’de Hemşirelik Alanında Bakım Paketleri ile Yapılmış Deneysel Lisansüstü Tez Çalışmalarının İncelenmesi: Sistemik Derleme

ABSTRACT

Aim

The use of care packages has positive effects on patient satisfaction and quality of care. The study aims to review the effectiveness of care packages in experimental postgraduate theses conducted with care packages in the nursing field in Turkey and to examine the data obtained from systematically.

Method

The universe of the study consists of postgraduate theses accessed from the database of the Council of Higher Education Thesis Center (YÖKTEZ) in Türkiye between 24 November 2023 and 6 December 2023. In the review, master’s and doctoral theses that evaluated the effects of care package applications in nursing care on outcomes, published in Turkish, research design randomized controlled, quasi-experimental and experimental, open access, and containing the keywords “care package”, “care protocol”, “nursing care” and “postgraduate thesis studies” were selected. Six postgraduate theses that met the research criteria constituted the sample of the systematic review.

Results

Of the graduate theses included in the study, 66.6% were quasi-experimental, 16.6% were experimental, and 16.6% were experimental. PRISMA-P was used as the protocol for the systematic review and writing of the article. As a result of the six theses included in the study, it was found that all the care packages used had positive effects on the examined parameters (100%).

Conclusion

It is seen that care package applications made in line with evidence-based approaches reduce complications and provide benefits in infection control and prevention. In this direction, it is recommended that care packages be disseminated.

Keywords

Care package, care protocol, nursing care, postgraduate thesis study

ÖZ

Amaç

Bakım paketi kullanımı hasta memnuniyeti ve bakım kalitesi üzerinde olumlu etkilere sahiptir. Çalışmanın amacı, Türkiye’de hemşirelik alanında bakım paketleri ile yürütülen deneysel lisansüstü tez çalışmalarında bakım paketlerinin etkinliğini gözden geçirmek ve bu çalışmalardan elde edilen verileri sistematik olarak incelemektir.

Yöntem

Çalışmanın evrenini Türkiye’deki Yükseköğretim Kurulu Tez Merkezi (YÖKTEZ) veri tabanından 24 Kasım 2023 ve 6 Aralık 2023 tarihleri arasında erişilen lisansüstü tez çalışmaları oluşturmaktadır. İncelemede, hemşirelik bakımında bakım paketi uygulamalarının çıktılara etkisinin değerlendirildiği, yayın dili Türkçe, araştırma tasarımı randomize kontrollü, yarı deneysel ve deneysel olan, açık erişime sahip, “bakım paketi”, “bakım protokolü”, “hemşirelik bakımı” ve “lisansüstü tez çalışmaları” anahtar kelimelerini içeren yüksek lisans ve doktora tezleri seçilmiştir. Bu tezler arasından araştırma kriterlerini karşılayan altı lisansüstü tez çalışması sistematik incelemenin örneklemini oluşturmuştur.

Bulgular

Çalışmaya dahil edilen lisansüstü tezlerin %66,6’sı yarı deneysel, %16,6’sı deneysel ve %16,6’sı da deneysel çalışma türündedir. Sistematik incelemenin protokolü ve makalenin yazımı için PRISMA-P kullanılmıştır. Çalışmaya dahil edilen altı tez sonucunda kullanılan bakım paketlerinin tümünde incelenen parametreler üzerinde olumlu etkileri olduğu bulunmuştur (%100).

Sonuç

Bu derleme ile kanıt temelli yaklaşımlar doğrultusunda yapılan bakım paketi uygulamalarının komplikasyonları azalttığı, enfeksiyon kontrol ve önlenmesinde yarar sağladığı görülmektedir. Bu doğrultuda bakım paketlerinin yaygınlaştırılması önerilmektedir.

Anahtar Kelimeler

Bakım paketi, bakım protokolü, hemşirelik bakımı, lisansüstü tez çalışması

What is Known in the Field

- A care bundle is defined as a combination of interventions that, when implemented individually, positively impact patient outcomes.
- The main purpose of the care package can be stated as the transfer of evidence-based clinical practice guidelines to practice by health-care professionals, ensuring standardization in patient care and improving healthcare practices.

Contribution of the Article to the Field

- In recent years, the use of care packages has increased, especially in postgraduate theses in nursing. As a result of this review, it is seen that care package applications made in line with evidence-based approaches reduce complications and provide benefits in infection control and prevention.
- Positive effects of the care packages used on the effects examined in the theses (respiration, skin integrity, distension, urinary breakfast, early mobilization, body characteristics, treatment) were determined. In this regard, the components of the dissemination of care packages are: It is distributed in such a way that this systematic combination can contribute as a future source of care packages.

INTRODUCTION

A care bundle is defined as a small evidence-based set or guideline of evidence-based interventions in symptom or treatment management for a specific group of patients that leads to significantly better outcomes when applied together compared to when applied individually (1,2). A care bundle is a collection of scientifically proven interventions (3). A care bundle aims to combine a set of evidence-based practices that should be implemented for each patient each time. The implementation of care bundles is thought to be an effective method to improve patient outcomes. For a care bundle to be effective, it needs to be well-understood and used (4). The concept of the use of bundles, which emerged as an innovative approach to improving care, was developed in 2001 as a joint initiative of the Institute for Healthcare Improvement (IHI) and the Voluntary Hospitals Association (VHA) involving 13 hospitals focused on improvement through the Idealized Design of the Intensive Care Unit (IDICU) (5). IHI is an independent, non-profit organization that works with healthcare providers and leaders around the world to provide safe and effective health services. IHI focuses on motivating and establishing the will for change and identifying and testing new models of care in collabo-

ration with the organization (5).

The care bundle concept was first defined in the United States and introduced in the United Kingdom in 2002.6 Among the first care bundles developed were the IHI Ventilator Bundle and the IHI Central Catheter Care Bundle developed in 2002. Each of the interventions that constitute a care bundle is based on well-defined, first- or second-level evidence (5,6). A care bundle is implemented by combining individually proven application steps, applying them to the patient at a certain time, and observing their effectiveness (7,8). The time allocated for care varies according to the care bundle. Some bundles may need to be implemented repeatedly for the same individual (9). The main logic behind care bundles is the "all or nothing" principle (4). When there is non-compliance with one of the parameters in the care bundle, it is considered that there is no compliance with the other parameters as well (5). There are criteria to be adopted in the development of a care bundle. These are as follows: the bundle should consist of high-level evidence including three to five interventions; each bundle element should be independent of each other; the bundle should be implemented to a defined group of patients in a defined place; the bundle should be developed by an interdisciplinary care team; the bundle elements should be descriptive rather than normative; the rate of compliance with the bundle should be above 95% (5).

A common language is established by the healthcare team in the care provided using the care bundle. When care practices are evidence-based, complications are minimized, costs are reduced, and patient care can be controlled (10). It is both easy to implement and practical. The fact that the care bundle includes evidence-based practices forms a bridge between clinical practice and research (11). Thus, the bundle is improved, and its applicability is increased with the help of the records and feedback (9,12).

Nurses are the pioneers of care. Therefore, nurses should follow up-to-date information and be involved in the development and use of the care bundle (13,14). Since nurses constitute a professional group who constantly follow the patient closely and undertake the responsibility of one-to-one care, they can recognize the deficiencies and shortcomings of the applied care bundle. Hereby, they will ensure the development of the care bundle (15,16). Furthermore, the use of the care bundle increases patient satisfaction and the quality of care, thereby raising the satisfaction levels and job satisfaction of nurses (8,17,18).

Although studies on care bundles have expanded in recent years in our country, there is no research in the literature in which the effectiveness of postgraduate thesis studies using care bundles has been examined. From this point of view, with this systematic review, postgraduate thesis studies conducted in Turkey using care bundles were reviewed and the outcomes of

the applied care bundles on patients were examined.

METHOD

This study is a systematic review. The PRISMA-P (Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols) protocol was used for the protocol of the systematic review and the writing of the paper. This study was registered on the PROSPERO system with the number CRD42023494055.

Literature Review

In this study, the searches were conducted on the databases of the Council of Higher Education Thesis Center (CHETC) between November 24 and December 6, 2023.

The criteria for inclusion in the search were as follows: publication at any year, randomized controlled, experimental, or quasi-experimental design, and use of care bundles in nursing care. During the search in the database, the keywords "care bundle, care protocol, nursing care, and postgraduate thesis studies" were used. The number of studies reached because of the search was categorized and shown in the PRISMA-P flowchart (Figure 1).

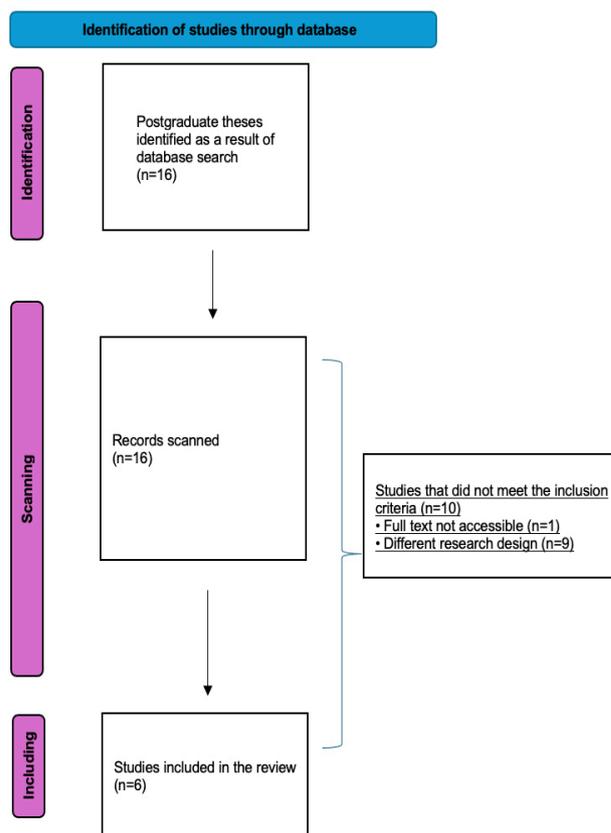


Figure 1. PRISMA-Flow chart of study selection

To eliminate bias in the study, literature review, data collection in the selection of studies, and evaluation of research quality were carried out by two independent researchers. The procedures were checked, and a consensus was reached by the researchers.

Study Selection Criteria and Selection of Studies

Studies that were eligible for this systematic review were selected according to the PICOS inclusion criteria.

P: (Study Group): Among postgraduate thesis studies conducted in the field of nursing in Turkey, randomized controlled and experimental studies using care bundles were included in the study sample without any year limitation.

I: (Intervention): In the postgraduate thesis studies conducted in the field of nursing in Turkey, the studies conducted using care bundles constituted the intervention dimension.

C: (Comparison): The effects of care bundles were compared in postgraduate thesis studies conducted using care bundles in the field of nursing in Turkey.

O: (Outcomes): The use and effects of care bundles in postgraduate thesis studies conducted in the field of nursing in Turkey were examined.

S: (Study design): Postgraduate thesis studies of which full texts were available, and which had randomized controlled and experimental designs were included in the study.

Studies in which care bundles were not used in nursing care, the results of which were not reported even if care bundles were used, which were not included in the YÖKTEZ database, and of which the study design was not randomized controlled or experimental were excluded from the research.

Methodological Quality Assessment of Studies

The Johanna Briggs Institute's checklists were used as a methodological assessment tool. These checklists consist of 13 items for randomized controlled trials and nine items for quasi-experimental studies. Each item is rated as "Yes, No, Uncertain and Not Applicable".

Data Retrieval Tool

In the study, a data retrieval tool developed by the researchers was used for data collection. With this data retrieval tool, findings regarding the author and publication year of the studies, the type of thesis, the type of research, the characteristics and size of the sample group, the care bundle used and its content, the measurement tool used, and the results obtained were included.

Ethical Consideration

This systematic review does not require ethics committee approval as it was conducted based on a literature review.

RESULTS

In the systematic review, 16 studies were reached in the YÖKTEZ database. After excluding the studies that did not meet the inclusion criteria (n=10) among the 16 studies that constituted the sample according to the PRISMA-P protocol, the remaining six studies were included in the review. The care packages examined in the study consist of the Urinary Infections and Incontinence Prevention Care Package, Pressure Injury Prevention Care Package, Preoperative Care Package After Heart Surgery, and Constipation Prevention Care Package.

Within the scope of the research, studies in which the effects of care bundles used in nursing care on patients were investigated were examined. One of these studies was randomized controlled, four were quasi-experimental, and one was an experimental postgraduate thesis study. Of the six studies included in the review, three were doctoral thesis studies and three were master's thesis studies. All studies were conducted in Turkey and the total sample size was 631. The measurement tools used in the studies, study findings, and conclusions and recommendations of each study are presented in detail in Table 1. As a result of the systematic review:

In the study conducted by Kaya (19), a care bundle for the prevention of constipation consisting of three interventions including warm water, clockwise abdominal massage, and fiber nutrition was used in the early postoperative period. The aim was to determine the effect of the care bundle for the prevention of constipation on the severity of postoperative constipation in patients undergoing orthopedic surgery. While the severity of constipation and stool consistency scores were lower in patients in the experimental group in whom the care bundle for the prevention of constipation was used, these values were found to be higher in patients in the control group.

In the study of Yılmaz (20), it was found that the "Cardiac Surgery Care Bundle" consisting of "Instruction of Patients and Relatives", "Respiratory Management", and "Early Mobilization" reduced respiratory complications in patients after open heart surgery.

In the study of Altaş (21), it was found that 61.2% (n=30) of the patients in the experimental group and all patients in the control group who received a care bundle consisting of risk assessment, skin assessment, skin care, positioning, and regulation of nutrition and fluid intake developed pressure injuries and it was concluded that the care bundle for the prevention of pressure injuries applied with evidence-based approaches was effective in the prevention of pressure injuries.

In the study of Eğilmez (22), it was found that the care bundle consisting of steps such as skin care, positioning, early mobilization, nutrition, and fluid intake was effective in preventing the development of operating room-induced pressure injuries. Moreover, it was determined that this care bundle had positive outcomes

in reducing the pain perception and fear of falling and increasing patients' comfort level.

The content of the care bundle used in the study of Ongün (23) included preoperative glycemic control, normothermia, cognitive behavioral pain relief methods, skin preparation as close as possible to surgery, shortening of the pre-operative fasting period, and instruction of the patient about the preoperative, in-

tra-operative and postoperative process in the pre-operative period. As a result of the study, it was found that the pre-operative care bundle application provided normothermia in patients undergoing cardiac surgery in the period after transfer from the operating room to the intensive care unit and decreased the early postoperative pain level.

Table 1. Included studies and their characteristics

AUTHOR / YEAR	STUDY	STUDY PATTERN	SAMPLING	MAINTENANCE PACKAGE AND ITS CONTENT	SCALE	OUTCOMES
Kaya 2023 Master's Thesis	The Determination of The Effect of A Constipation Prevention Care Package on Postoperative Constipation Severity in Patients Undergoing Orthopedic Surgery	Randomized controlled trial	Control group: 51 patients Experimental group: 51 patients	Constipation Prevention Care Package -Intake of warm liquid -Abdominal massage -Fiber diet	Descriptive Characteristics Form, Constipation Risk Assessment Scale, Visual Comparison Scale, Bristol Stool Consistency Scale	Thanks to the care package, it was found that drinking warm water in the early period, supporting abdominal massage and fiber nutrition reduced the severity of constipation symptoms. It was found that drinking warm water in the early period, abdominal massage and supporting a fiber diet reduced the consistency of stool.
Yılmaz 2022 PhD Thesis	Investigation of The Effect of Care Bundle Implementation on Recovery Process in Open Heart Surgery Patients	quasi-experimental, non-randomized	Control group: 69 patients Experimental group: 34 patients	Heart Surgery Care Package -Informing patients and their relatives -Respiratory management -Early mobilization	Data were obtained using the "Descriptive Characteristics Data Form", "Patient Outcomes Form for Complications" and "Quality of Recovery-40-QoR-40".	Cough (55.9% and 32.4%, respectively) and pathological lung sound (79.7% and 82.6%, respectively) findings were lower in the study group than in the control group. Pulmonary complication rate was 5.9% in the study group; 11.6% in the control group, and the total QoR-40 score of the study group was 177.70±10.77; The value of the control group was determined as 165.28±15.63. It was determined that nurses complied with the care package at a rate of 70.6%.
Altas 2022 Master's Thesis	Evaluation of Pressure Injury Prevention Care Bundle Application in Intensive Care Unit Patients Diagnosed with Internal Diseases	Quasi-experimental, with control group	Control group: 49 patients Experimental group: 49 patients	Pressure Injury Prevention Care Package -Risk assessment -Skin assessment -Skin care -Position giving	Patient identification form and Braden Risk Scale were used to collect data.	Pressure injury developed in all patients in the control group and in 61.2% (n=30) of the patients in the experimental group. It was found that the average time to development of pressure injury was longer in the intervention group. It was concluded that the pressure injury prevention care package applied with evidence-
				-Regulation of nutrition and fluid intake		based approaches is effective in preventing pressure injuries.
Eğilmez 2022 PhD Thesis	Investigation of The Effect of Care Bundle For Pressure Injuries on Reducing The Development of Operating Room Pressure Injuries in Patients Undergoing Orthopedic Surgery	non-randomized controlled, quasi-experimental	Control group: 122 patients Experimental group: 68 patients	Pressure Sore Care Package - Skin care - Positioning - Early mobilization -Nutrition and fluid intake	Patient Identification Data Form, 3S Operating Room Pressure Sore Risk Assessment Scale, Visual Comparison Scale, Fear of Falling Scale, General Comfort Scale Short Form, Pressure Sore Care Package Clinical Data Collection Form, National Pressure Ulcer Advisory Panel (NPUAP) (2016) Pressure Sore Staging System Form, Pressure Sore Regions and Stages Follow-up Record forms	The operating room pressure sore prevention care package, which includes evidence-based interventions, was found to be effective in preventing the development of operating room-related pressure sores; It has also been determined that it has positive results in reducing patients' pain perception and fear of falling, and increasing their comfort level.
Ongün 2021 PhD Thesis	Effect of A Preoperative Care Package on Recovery in Patients Undergoing Cardiac Surgery	semi-experimental	Control group: 43 patients Experimental group: 43 patients	Preoperative Care Package -Preoperative glycemic control - Normothermia -Cognitive behavioral pain relief methods in the context of non-medical pain management education for patients	Introductory information form, preoperative care package application list, intraoperative patient information form, postoperative patient evaluation form	Preoperative care package application in patients undergoing cardiac surgery can be used safely in nursing practices as it ensures normothermia in the period after transfer from the operating room to the intensive care unit and reduces the level of early postoperative pain.
				- Skin preparation should be done as soon as possible before the surgery. - Shortening the fasting period before surgery -In the preoperative period, the patient; Informing about the process before, during and after surgery		
Kutluğ 2021 Master's Thesis	The Evaluation of The Effect of Care Package Application on Urinary Catheter-Related Infection and Incontinence of Female Patients in Intensive Care Unit	experimental	Control group: 26 patients Experimental group: 26 patients	Urinary Infections and Incontinence Prevention Care Package -Type of catheterization -Catheter selection -Catheter insertion indication -Aseptic methods in catheterization -Planned catheter removal steps	Patient Diagnosis Form, Patient Monitoring Form, Overactive Bladder Inquiry Form (OAB-V8)	The incidence of urinary tract infection symptoms after catheterization was found to be significantly higher in the study group (42.3%) compared to the control group (15.4%) (p<0.05). By applying the care package, incontinence and urinary tract infection status were examined and no significant results were found.

The content of the care bundle in the study of Kutluğ (24) included catheterization type, catheter selection, indication for catheter insertion, aseptic methods in catheterization, and planned catheter removal. As a result of the study, it was found that the incidence of urinary tract infection symptoms after catheterization was significantly higher in the experimental group (42.3%) compared to the control group (15.4%). In terms of growth in urine culture, it was found that there was growth in the urine samples of 19.2% of the exper-

imental group and 26.9% of the control group. In the study, the presence of incontinence and urinary tract infection was examined by applying the care bundle, and no significant results were found.

When the findings of the postgraduate thesis studies were examined, it was seen that five of the care bundles used were effective, but the care bundle used in one study was not effective. The methodological quality assessment of studies concluded that all studies were of low risk (Table 2).

Table 2. Johanna Briggs Institute evaluation criteria for Randomized Controlled and Quasi-Experimental Studies (non-randomized experimental studies)

Author	Study Title	Quality Assessment Score
Kaya 2023	The determination of the effect of A constipation prevention care package on postoperative constipation severity in patients undergoing orthopedic surgery	Yes: 11 No: 0 Uncertain: 2 Not applicable: 0
Yılmaz 2022	Investigation of the effect of care bundle implementation on recovery process in open heart surgery patients	Yes: 8 No: 0 Uncertain: 1
Altaş 2022	Evaluation of pressure injury prevention care bundle application in intensive care unit patients diagnosed with internal diseases	Yes: 7 No: 1 Uncertain: 1
Eğilmez 2022	Investigation of the effect of care bundle for pressure injuries on reducing the development of operating room pressure injuries in patients undergoing orthopedic surgery	Yes: 8 No: 0 Uncertain: 1
Ongün 2021	Effect of A preoperative care package on recovery in patients undergoing cardiac surgery	Yes: 8 No: 0 Uncertain: 1
Kutluğ 2021	The evaluation of the effect of care package application on urinary catheter-related infection and incontinence of female patients in intensive care unit	Yes: 7 No: 1 Uncertain: 1

DISCUSSION

Care bundle is an evidence-based approach that improves the quality of care and creates positive outcomes for patients, organisations and staff (25). The main reason for the creation and implementation of care bundles used in nursing care is to use evidence-based practices in clinics and to ensure the development of standardised care in health care practices. Thus, the expected improvement can be seen in the quality and outcomes of the care received by patients. In this respect, it is recommended that care bundles should be generalised. In this section, the postgraduate theses in which the care bundle is used are discussed in line with the literature. One of the theses analysed in this direction Kaya's (19) master's thesis titled 'The determination of the effect of A constipation prevention care package on postoperative constipation severity in patients undergoing orthopedic surgery'. The content of the care package used in this thesis consists of warm water intake, abdominal massage and fibre nutrition. In this thesis study,

which determines the effect of the care package for the prevention of constipation with three interventions consisting of warm water intake, clockwise abdominal massage and fibre nutrition on the severity of postoperative constipation in the early postoperative period in patients undergoing orthopaedic surgery, it was found that the care package for the prevention of constipation was effective in patients undergoing orthopaedic surgery. Apart from this thesis study, no study was found in the literature on the use of a three-intervention care bundle consisting of drinking warm water, clockwise abdominal massage and fibre nutrition in the early postoperative period to prevent constipation in patients undergoing orthopaedic surgery. Early initiation of oral intake has been reported to have a favourable effect on bowel movements (26). It is known that warm water increases the gastric emptying rate and thus increases gastric and bowel movements (27). Abdominal massage creates a mechanical and reflex effect on the intestines, changes intra-abdominal pressure and increases bowel movements. Peristaltic

movements accelerate the movement of food in the gastrointestinal tract and increase bowel movements by shortening the retention time of faeces in the large intestine (28,29). The weight of the stool, the duration of passage through the intestine and the frequency of movements are affected by the intake of plenty of fibrous food (30). The care package prepared in line with the literature reflected positively on the study results. In the study, it was found that drinking warm water in the early postoperative period created a significant difference in the severity of gas formation in the experimental and control groups (19)

In Yılmaz's doctoral thesis titled "Investigation of the effect of care bundle implementation on recovery process in open heart surgery patients"; the content of the care package consists of informing the patient and their relatives, respiratory management and early mobilization. It was determined that the care package used in this study could reduce respiratory complications in patients after open heart surgery (20). Breathing and coughing exercises included in the care bundle expand lung capacity and provide bronchial clearance (31). As a result of the study, when the findings regarding the respiratory patterns of the patients were examined, it was determined that the Cardiac Surgery Care Bundle was effective in ensuring bronchial clearance (20). In the literature, a multicenter study was conducted to determine the incidence of post-cardiac surgery pulmonary complications (atelectasis, pleural effusion, respiratory failure, respiratory tract infection, pneumothorax, bronchospasm, or aspiration pneumonia). In the study, it was concluded that 34% of patients without a history of lung disease developed postoperative pulmonary complications (32). In this postgraduate thesis study, the rate of developing pulmonary complications in the care bundle group (5.9%) was lower than in the control group (11.6%) (20).

It is seen that the care bundle to be applied will contribute positively to respiratory complications. Similarly, Strobel et al. (33) implemented a care bundle including recommendations to prevent pneumonia after cardiac surgery (lung protective ventilation management, early extubation, mobilization, and avoidance of postoperative bronchodilator therapy) in 18 centers with low (5.9%), moderate (5.9-6.1%), and high (>6.1%) pneumonia rates. The rate of pneumonia decreased to 2.4% after the intervention (33). In another study, a "perioperative care bundle" was created for rapid recovery after cardiac surgery. The content of the care bundle included a detailed assessment of preoperative anesthesia and perioperative fluid intake, consumption of carbohydrate beverages, premedication, postoperative analgesic drug management, medical treatment for bowel movements, and early postoperative mobilization. According to the study results, although the care bundle intervention did not cause a significant

difference in the rate of postoperative respiratory failure complications, the study group patients (1.9%) had fewer complications compared to the control group (9.4%) (34). In the literature, early mobilization application in care bundles prepared for cardiovascular surgery patients has been reported. It can be suggested that the mobilization application used in these studies contributes to reducing the rate of development of pulmonary complications. It should also be considered that the interventions included in the care bundle may have a common effect on complications. With the care bundle used in this postgraduate thesis study, it was reported that the respiratory patterns of the patients were better than those of the control group.

In Altaş's master's thesis titled "Evaluation of pressure injury prevention care bundle application in intensive care unit patients diagnosed with internal diseases"; the content of the care package consists of risk assessment, skin assessment, skin care, positioning and regulation of nutrition and fluid intake. As a result of the study, 61.2% of the patients in the experimental group and all patients in the control group developed pressure injuries (21). It was concluded that the care bundle for the prevention of pressure injury applied with evidence-based approaches was effective in preventing pressure injuries. Pressure injuries are frequently seen in intensive care units due to some risk factors such as prolonged immobilization, hemodynamic imbalance-related poor tissue perfusion, skin maceration due to humidity, and inadequate nutrition (28,35). Pressure injuries can be prevented by providing appropriate nursing care. There are other studies in which care bundles developed for the prevention of pressure injuries have been effective. In the study conducted by Al-Otaibi et al. (36), the prevalence of pressure injury in the hospital was 7.5% before the application of the bundle, and this rate decreased to 4% by the end of 2017. It was reported that the rate of developing pressure injuries decreased by 84% after the bundle was applied and a statistically significant difference was found between the two groups. Like the current study, in a study conducted with a care bundle consisting of providing a supporting surface, skin examination, and repositioning parameters, it was found that 5 of 462 patients had pressure injuries before the bundle application, while 1181 patients did not develop any pressure injury after the bundle application (37).

In the study of Tayyib et al. (38), it was reported that the incidence and severity of pressure injuries and the total number of pressure injuries per patient decreased with the use of the care bundle in patients in the intervention group. In another study on a care bundle for the prevention of pressure injuries in adult intensive care units, the cumulative incidence of pressure injuries was significantly lower in the intervention group (18%) compared to the control group (30.4%) (39). In another study that aimed to evaluate the processes

that form the basis of the care bundle application, the content of the care bundle included the parameters of movement, attention to skin, and healthy nutrition. As a result of the study, it was found that there was a decrease of 42% in the risk of pressure injury with the bundle application (40). Likewise, in the study conducted by Chaboyer et al. (9), it was found that half of the patients had pressure injuries in hospitals where the care bundle for the prevention of pressure injuries was used compared to hospitals where standard care was applied. In another study conducted to examine the effectiveness of the universal care bundle for the prevention of pressure injuries in intensive care patients, it was reported that the incidence of unit-related pressure injuries decreased from 15.5% to 2.1%. (9).

It has been concluded in the literature that the use of care bundles developed for the prevention of pressure injuries prevents the development of pressure injuries. The postgraduate thesis study examined is consistent with the literature and it was concluded that the pressure injuries developed less in the group in which the care bundle for the prevention of pressure injuries was applied and therefore the application of the care bundle was found to be effective.

In Eğılmez's doctoral thesis titled "Investigation of the effect of care bundle for pressure injuries on reducing the development of operating room pressure injuries in patients undergoing orthopedic surgery"; the content of the care package consists of skin care, positioning, early mobilization, nutrition and hydration initiatives. The care package used was found to be effective in preventing the development of operating room-related pressure sores; It has also been determined that it has positive results in reducing patients' pain perception and fear of falling and increasing their comfort level (22). Since patients undergoing orthopedic surgical intervention are in the risky group in terms of the development of operating room-induced pressure injuries, the use of a care bundle is important in the prevention and treatment of pressure injuries. In addition to preventing pressure injuries, the care bundle used also contributes to the functional abilities of patients in ensuring movement activity, comfort, and activities of daily living (41).

In the literature, there are studies in which care bundles developed for the prevention of pressure injuries have been shown to be effective in reducing/preventing the incidence of pressure injuries, and these studies have mostly been carried out in intensive care units (21,35). Except for the postgraduate thesis examined, no study includes evidence-based components for the prevention/reduction of operating room-induced pressure injuries in the early postoperative period. Patients with limited mobility are at a higher risk of developing pressure injuries whereas anesthetized patients are particularly vulnerable due to limited mobility and in-

terventions to prevent pressure injuries in this period are limited (42).

In Ongün's doctoral thesis titled "Effect of A preoperative care package on recovery in patients undergoing cardiac surgery", she explained the content of the care package; preoperative glycemic control, normothermia, cognitive behavioral pain relief methods in the context of non-medical pain management education for patients, skin preparation should be done as soon as possible before the surgery, Shortening the fasting period before surgery, in the preoperative period, the patient; It consists of informing about the process before, during and after surgery. It has been found that preoperative care package application in patients undergoing cardiac surgery ensures normothermia in the period after transfer from the operating room to the intensive care unit and reduces the level of early postoperative pain.(23).

In recent studies conducted with cardiovascular surgery patients, interventions with a high level of evidence have been applied to reduce postoperative pain levels, shorten the length of stay in the hospital and intensive care units, reduce postoperative extubation time, and prevent potential postoperative complications (34,43). The interventions applied in the studies were found to improve patients' postoperative outcomes (44-46). In the study conducted by Chan et al. (47) in which a rapid extubation protocol was applied to reduce the extubation time of patients after cardiac surgery, it was found that the mean duration of operation and aortic cross-clamping time of the experimental and control groups were almost the same. In the study of Markham et al. (48) in which multimodal analgesia recommendations of Enhanced Recovery After Surgery (ERAS) Cardiac Society were applied as a care bundle, the mean cardiopulmonary bypass time was 116.5 ± 31.5 minutes and the mean aortic cross-clamp time was 87.2 ± 27.1 minutes in the experimental group; the mean cardiopulmonary bypass time was 101.8 ± 35.5 minutes and the mean aortic cross-clamp time was 74 ± 27.5 minutes in the control group (48).

In another study in which preoperative and postoperative care bundle applications were used in cardiovascular surgery patients, the mean cardiopulmonary bypass time was 89.6 minutes in the experimental group and 101.6 minutes in the control group; the mean aortic cross-clamp time was 58.4 minutes in the experimental group and 60.7 minutes in the control group (34). The establishment of care bundles consisting of a high level of evidence aims to accelerate the recovery process of patients, especially those hospitalized in intensive care units (6). In another study in which multimodal analgesia applications included in the surgical protocols of the ERAS Cardiac Society were applied as a care bundle, the mean duration of stay in intensive care units was found to be 3 days in the

care bundle group and 4 days in the non-care bundle group (48). It has been reported that preoperative patient instruction, which is one of the elements of the preoperative care bundle, reduces anxiety about anesthesia and surgery and postoperative pain, shortens the length of hospital stay, and contributes positively to postoperative patient recovery (49).

In Kutluğ's master's thesis titled "The evaluation of the effect of care package application on urinary catheter-related infection and incontinence of female patients in intensive care unit", he explained the content of the care package; type of catheterization, catheter selection, catheter insertion indication, aseptic methods in catheterization, planned catheter removal steps. As a result of the study, the incidence of urinary tract infection symptoms after catheterization was found to be significantly higher in the experimental group (42.3%) compared to the control group (15.4%) (24).

When analyzed in terms of growth in urine culture, it was found that there was growth in urine samples of 19.2% of the experimental group and 26.9% of the control group. The most common infection among nosocomial infections is catheter-related urinary tract infections (CR-UTIs) (20,50). Although many protocols and guidelines have been developed to reduce CR-UTIs, it is still the most common nosocomial infection. When the studies were reviewed, it was found that CR-UTI increased the mortality and morbidity rates of inpatients (50).

As a result of the postgraduate thesis studies examined within the scope of this systematic review and the studies in the literature on care bundles, it was observed that the use of evidence-based care bundles in nursing care resulted in positive outcomes in patient groups.

CONCLUSION AND RECOMMENDATIONS

Care bundles have both tangible and intangible benefits for the patient, the healthcare team, and the healthcare system. A common language is created by the healthcare team in the care provided using the care bundle. Care bundles reduce complications and costs and increase the quality of care and patient comfort. At the same time, the use of care bundles is easy and practical. It builds a bridge between clinical practice and scientific research as it includes evidence-based practices. When conditions such as urinary catheterization, incontinence and urinary infection, constipation, pressure injuries, and pre- and postoperative care are examined with an evidence-based care bundle in the national and international field, positive outcomes for the patient and healthcare team have emerged. Nurses should adopt care bundles, which are increasingly being used in our country, and use them more frequently. There is a need for further studies in this field involving evidence-based care bundles developed with different patient groups.

Author Contributions

Idea/Concept: AD, BT; Design: AD, BT; Supervision/Consultancy BT; Data Collection and Processing: AD, Analysis/Interpretation: AD, BT; Literature Review: AD, BT; Manuscript Writing: AD, BT; Critical Review: AD, BT

Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

REFERENCES

1. Ballantyne H. Beyond the nursing care plan: an introduction to care bundles. *Veterinary Nursing Journal*. 2016;31(2):43-46.
2. Blot S, Ruppé E, Harbarth S, Asehnoune K, Poulakou G, Luyt CE, et al. Healthcare-associated infections in adult intensive care unit patients: Changes in epidemiology, diagnosis, prevention and contributions of new technologies. *Intensive and Critical Care Nursing*. 2022;70:103227.
3. Borgert M, Binnekade J, Paulus F, Goossens A, Dongelmans D. A flowchart for building evidence-based care bundles in intensive care: based on a systematic review. *International Journal for Quality in Health Care*. 2017;29(2):163-175.
4. Lavallée JF, Gray TA, Dumville J, Russell W, Cullum N. The effects of care bundles on patient outcomes: A systematic review and meta-analysis. *Implementation Science*. 2017;12(1):1-13.
5. Resar R, Griffin FA, Haraden C, Nolan TW. Using care bundles to improve health care quality. IHI innovation series white paper. Cambridge (MA): Institute for Healthcare Improvement.2012.
6. Fulbrook P, Mooney S. Care bundles in critical care: a practical approach to evidence-based practice. *Nursing in Critical Care*. 2003;8(6):249-255.
7. Devlin JW, O'Neal Jr, HR, Thomas C, Daly MAB, Stollings JL, Janz DR, Lin JC. Strategies to optimize ICU liberation (A to F) bundle performance in critically ill adults with coronavirus disease 2019. *Critical Care Explorations*. 2020;2(6).
8. Candaş B, Gürsoy A. Time to take action for nurses: from evidence-based practices to care packages. *Journal of Education & Research in Nursing*. 2017;14(3).
9. Chaboyer W, Bucknall T, Webster J, McInnes E, Gillespie BM, Banks M, et al. The effect of a patient centred care bundle intervention on pressure ulcer incidence (INTACT): A cluster randomised trial. *International Journal of Nursing Studies*. 2016; 64:63-71.
10. Sayın Y. What is a care package? 10th National Turkish Surgical and Operating Room Nursing Congress Congress Book. November. 2015;12-16:110-112
11. Skaggs MKD, Daniels JF, Hodge AJ, DeCamp VL. Using the evidence-based practice service nursing bundle to increase patient satisfaction. *Journal of emergency Nursing*. 2018;44(1):37-45.
12. <http://www.ihl.org> Accessed on: 6 December 2023.
13. Weiser MR, Gonen M, Usiak S, Pottinger T, Sameedy P, Patel D, et al. Effectiveness of a multidisciplinary patient care bundle for reducing surgical-site infections. *Journal of British Surgery*. 2018;105(12):1680-1687.
14. Yazıcı G, Bulut H, Kahraman BB, Palteki T. Analysis of the efficiency and cost of a care bundle for prevention of common infections in an intensive care unit: A quasi-experimental pretest-posttest design study. *Konuralp Medical Journal*. 2022;14(2):398-405.
15. Gel KT, Yaşacak A, Yorgun S. Nurses' views on care package practices. *Anatolian Journal of Nursing and Health Sciences*. 2020;23(3):383-388.
16. Zuo XL, Meng FJ. A care bundle for pressure ulcer treatment in intensive care units. *International Journal of Nursing Sciences*. 2015;2(4):340-347.
17. Anderson M, Guthrie PF, Kraft W, Reicks P, Skay C, Beal AL. Universal pressure ulcer prevention bundle with WOC nurse support. *Journal of Wound Ostomy & Continence Nursing*. 2015;42(3):217-225. <https://doi.org/10.1097/WON.000000000000109>.
18. Şen S, Uğur E, Afacan S, Sönmezoğlu M. Use of care packages in the prevention of intensive care infections. *Journal of Intensive Care Nursing*. 2019;23(1):27-35.
19. Kaya K. The Determination of The Effect of A Constipation Prevention Care Package on Post-operative Constipation Severity in Patients Undergoing Orthopedic Surgery, Gaziantep, Hasan Kalyoncu University Graduate School of Education, Master's Thesis. 2023.
20. Yılmaz Y. Investigation of The Effect of Care Bundle Implementation on Recovery Process in Open Heart Surgery Patients, Gaziantep, Hasan Kalyoncu University Graduate Education Institute, Doctoral Thesis. 2022.

21. Altaş G. Evaluation of Pressure Injury Prevention Care Bundle Application in Intensive Care Unit Patients Diagnosed with Internal Diseases, Istanbul, University of Health Sciences, Hamidiye Institute of Health Sciences, Master's Thesis. 2022.
22. Eğılmez H. Investigation of the Effect of Pressure Wound Care Package in Reducing the Development of Pressure Wound in the Operating Room in Orthopedic Surgery Patients, Gaziantep, Hasan Kalyoncu University Graduate School of Education, Doctoral Thesis. 2022.
23. Ongün P. Effect of A Preoperative Care Package on Recovery in Patients Undergoing Cardiac Surgery, Istanbul, Istanbul University-Cerrahpaşa Institute of Postgraduate Education, Doctoral Thesis. 2021.
24. Kutluğ S. The Evaluation of The Effect of Care Package Application on Urinary Catheter-Related Infection and Incontinence of Female Patients in Intensive Care Unit, Sakarya, Sakarya University Graduate School of Health Sciences, Master's Thesis. 2021.
25. Alcan AO, Korkmaz FD. Prevention of ventilator-associated pneumonia: A care package approach. *Izmir University Medical Journal*. 2015; 3:38-47.
26. Irmak B, Bulut H. Use of non-pharmacologic methods to improve bowel function after abdominal surgery: What does the evidence say? *Istanbul Gelişim University Journal of Health Sciences*. 2021;(14):336-350.
27. Hodges LA, Hughes A, Targett D, Durcan MJ. Does a hot drink provide faster absorption of paracetamol than a tablet? A pharmacoscintigraphic study in healthy male volunteers. *Pharm Res*. 2014;31(8):2078-2085.
28. McNichol L, Mackey D, Watts C, Zuecca N. Choosing a support surface for pressure injury prevention and treatment. *Nursing*. 2020;50(2).
29. Dale CM, Rose L, Carbone S, Pinto R, Smith OM, Burry L, et al. Effect of oral chlorhexidine de-adoption and implementation of an oral care bundle on mortality for mechanically ventilated patients in the intensive care unit (CHORAL): a multi-center stepped wedge cluster-randomized controlled trial. *Intensive Care Medicine*. 2021; 47:1295-1302.
30. Dennison C, Prasad M, Lloyd A, Bhattacharyya SK, Dhawan R, Coyne K. The health-related quality of life and economic burden of constipation. *Pharmacoeconomics*. 2005; 23:461-476.
31. Pérez-Granda MJ, Barrio JM, Muñoz P, Hortal J, Rincón C, Bouza E. Impact of four sequential measures on the prevention of ventilator-associated pneumonia in cardiac surgery patients. *Crit Care*. 2014;18(2):1-8.
32. Fischer MO, Brotons F, Briant AR, Suehiro K, Gozdzik W, Sponholz C, et al. Postoperative pulmonary complications after cardiac surgery: the VENICE international cohort study. *Journal of Cardiothoracic and Vascular Anesthesia*. 2022; 36:23442-351.
33. Strobel RJ, Harrington SD, Hill C, Thompson MP, Cabrera L, Theurer P, et al. Evaluating the impact of pneumonia prevention recommendations after cardiac surgery. *Ann Thorac Surg*. 2020;110(3):903-910.
34. Fleming IO, Garratt C, Guha R, Desai J, Chaubey S, Wang Y, et al. Aggregation of marginal gains in cardiac surgery – feasibility of a perioperative care bundle for enhanced recovery in cardiac surgical patients, *Journal of Cardiothoracic and Vascular Anesthesia*. 2016;30(3):665-670.
35. Yilmazer T. Current approach in the prevention of pressure sores; care package approach. *Nursing and Innovation Izmir: Güven Plus A.Ş. Publications*. 2018;280-298.
36. Al-Otaibi YK, Al-Nowaiser N, Rahman A. Reducing hospital-acquired pressure injuries. *BMJ Open Quality*. 2019;8(1):e000464.
37. Lavallée JF, Gray TA, Dumville J, Cullum N. Preventing pressure ulcers in nursing homes using a care bundle: a feasibility study. *Health & Social Care in The Community*. 2019;27(4):e417-e427.
38. Tayyib N, Coyer F, Lewisa PA. Implementing a pressure ulcer prevention bundle in an adult intensive care. *Intensive and Critical Care Nursing*. 2016; 37:27-36.
39. Tschannen D, Bates O, Talsma A, Guo Y. Patient-Specific and Surgical Characteristics in The Development Of Pressure Ulcers. *American Journal of Critical Care*. 2012;21(2):116-124.
40. Roberts S, McInnes E, Bucknall T, Wallis M, Banks M, Chaboyer W. Process evaluation of a cluster-randomised trial testing a pressure ulcer prevention care bundle: a mixed-methods study. *Implementation Science*. 2017; 12:1-9.

41. Şahin G, Başak T. Intraoperative pressure injury risk assessment of patients over 65 years of age undergoing orthopedic surgery. *SBÜ Journal of Nursing*. 2020;2(2):55-62.
42. Shafipour V, Ramezani E, Gorji MA, Moosazadeh M. Prevalence of postoperative pressure ulcer: A systematic review and meta-analysis. *Electron Physician*. 2016;8(11):3170-3176.
43. Gilhooly D, Green SA, McCann C, Black N, Moonesinghe SR. Barriers and facilitators to the successful development, implementation and evaluation of care bundles in acute care in hospital: a scoping review. *Implementation Science*. 2019;14(1):1-12.
44. Clark K, Curry T, Byfieldt N. The effect of a care bundle on nursing staff when caring for the dying. *International Journal of Palliative Nursing*. 2015;21(8):392-398.
45. Clarkson DM. The role of 'care bundles' in healthcare. *British Journal of Healthcare Management*. 2013;19(2):63-68.
46. Conway A, Gow J, Ralph N, Duff J, Edward KL, Alexander K, et al. Implementing a thermal care bundle for inadvertent perioperative hypothermia: A cost-effectiveness analysis. *International Journal of Nursing Studies*. 2019; 97:21-27.
47. Chan JL, Miller JG, Murphy M, et al. A multidisciplinary protocol driven approach to improve extubation times following cardiac surgery. *Ann Thorac Surg*. 2018;(18):S0003-4975.
48. Markham T, Wegner R, Hernandez N, Lee JW, Choi W, Eltzschig HK, et al. Assessment of a multimodal analgesia protocol to allow the implementation of enhanced recovery after cardiac surgery: retrospective analysis of patient outcomes. *Journal of Clinical Anesthesia*. 2019; 54:76-80.
49. Eastwood D, Manson N, Bigney E, Darling M, Richardson E, Paixao R, et al. Improving postoperative patient reported benefits and satisfaction following spinal fusion with a single preoperative education session. *The Spine Journal*. 2019;19(5):840-845.
50. Gustafsson UO, Scott MJ, Hubner M, Nygren J, Demartines N, Francis N, et al. Guidelines for perioperative care in elective colorectal surgery: Enhanced Recovery After Surgery (ERAS®) Society recommendations: *World Journal of Surgery*. 2019; 43:659-695.