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Original Article

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Acupressure for acute pain management in patients with hypertension: A two-case nursing study

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ABSTRACT

Introduction: Hypertension is a major non-communicable disease frequently accompanied by acute pain, particularly headache and neck pain, which may reduce patient comfort and interfere with daily activities. Acupressure is a non-pharmacological nursing intervention that may support pain relief and promote relaxation in patients with hypertension. This study aimed to describe the application of acupressure management in reducing acute pain among hypertensive patients.

Research Methodology: This study used a descriptive case study design involving two hypertensive patients with acute pain nursing problems. The intervention consisted of acupressure therapy applied to PC6 (Neiguan), LI11 (Quchi), LI4 (Hegu), GB20 (Fengchi), and LV3 (Taichong) acupoints for five consecutive days. Data were collected through interviews, observation, physical examination, blood pressure measurement, and pain intensity assessment using the Numerical Rating Scale. Data were analyzed descriptively by comparing clinical responses before and after the intervention. Because of the case study design and small sample size, odds ratio, beta coefficient, relative risk, 95% confidence interval, and p-value were not calculated.

Results: Both patients showed gradual improvement after receiving acupressure therapy. In the first patient, pain intensity decreased from NRS 6 to 1, while in the second patient, pain intensity decreased from NRS 5 to 1. Blood pressure also showed a downward trend, accompanied by increased comfort and relaxation during the intervention period.

Conclusion: Acupressure may serve as a feasible complementary nursing intervention for managing acute pain in hypertensive patients. Further studies with larger samples and controlled designs are needed to confirm its clinical effectiveness.

Keywords: acupressure; hypertension; nursing care; pain measurement; therapeutics.

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INTRODUCTION

Hypertension remains one of the most pressing global health problems because of its high prevalence, long-term complications, and persistent challenges in clinical control. The World Health Organization reported that approximately 1.4 billion adults aged 30–79 years had hypertension in 2024, representing about one-third of the adult population in this age group[1]. Importantly, nearly two-thirds of adults with hypertension live in low- and middle-income countries, where early detection, treatment adherence, and continuity of care often remain limited[2]. Although hypertension is frequently asymptomatic, uncontrolled blood pressure substantially increases the risk of cardiovascular disease, stroke, kidney failure, and premature mortality[3]. In clinical nursing practice, hypertension is not only managed as a cardiovascular risk condition but also as a source of recurrent patient discomfort, including headache, neck pain, dizziness, sleep disturbance, anxiety, and reduced daily functioning[4,5].

Pain associated with hypertension deserves greater clinical attention because it can affect comfort, self-care behavior, and treatment adherence[6]. Pain is defined by the International Association for the Study of Pain as an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage[7]. This definition emphasizes that pain is not merely a physiological signal but also a subjective and emotional experience. In patients with hypertension, headache or neck pain may arise in relation to vascular changes, increased pressure, stress responses, or associated tension[8]. Although pharmacological therapy is central to hypertension management, pain symptoms are often addressed through supportive nursing interventions that aim to improve comfort, relaxation, and patient participation in care[9].

Non-pharmacological interventions are increasingly recognized as important complementary approaches in nursing care because they can be applied alongside standard medical treatment, may enhance patient comfort, and often support self-management [10]. Among these interventions, acupressure has attracted attention as a low-cost, non-invasive, and relatively simple technique that uses manual pressure on specific acupoints to stimulate physiological responses[11]. A systematic review published in Clinical Epidemiology and Global Health reported that acupressure therapy showed potential benefits in lowering blood pressure among patients with hypertension, particularly when applied to specific acupoints such as LR3, HT7, and KI3. Another summary of the same review noted that studies on acupressure for hypertension commonly used randomized controlled or quasi-experimental designs and assessed changes in blood pressure as the primary clinical outcome. These findings suggest that acupressure may have therapeutic value, but they also show that the existing evidence is still concentrated on blood pressure outcomes rather than the integrated nursing problem of acute pain in hypertensive patients.

The literature therefore presents several important limitations. First, many studies focus primarily on systolic and diastolic blood pressure reduction, while pain intensity, comfort, relaxation, and nursing diagnoses are less frequently positioned as central outcomes. Second, although acupressure is often discussed as a complementary therapy, fewer studies describe how it is implemented in routine nursing care for patients who present with acute pain related to hypertension. Third, evidence from small clinical settings remains limited, particularly in hospital-based case contexts where nurses must adapt interventions to individual patient conditions, symptom patterns, and daily clinical responses. Finally, many previous studies emphasize statistical effectiveness but provide less detailed description of the clinical process, including acupoint selection, daily patient response, pain scale changes, and practical

implications for nursing care.

This gap is relevant to the present case study. The manuscript reports the application of acupressure among two hypertensive patients with acute pain at RSAU dr. Dody Sardjoto. The intervention was applied for five consecutive days at PC6/Neiguan, LI11/Quchi, LI4/Hegu, GB20/Fengchi, and LV3/Taichong, with data collected through interviews, observation, physical examination, blood pressure measurement, and pain assessment using the Numerical Rating Scale. The reported outcomes showed gradual pain reduction in both patients, with the first patient decreasing from NRS 6 to 1 and the second from NRS 5 to 1, accompanied by decreased blood pressure and improved comfort and relaxation.

The novelty of this study lies in its clinical nursing orientation. Rather than examining acupressure solely as a blood-pressure-lowering technique, this study describes its application as part of acute pain management in hypertensive patients. It contributes practical evidence on how a structured five-day acupressure intervention may be integrated into nursing care to support pain reduction, comfort, and patient relaxation. Although the small case-study design does not allow causal inference or statistical estimation of effect size, the findings provide clinically meaningful observations that may inform future controlled studies with larger samples. Therefore, this study aimed to describe the application of acupressure management in reducing acute pain among patients with hypertension at RSAU dr. Dody Sardjoto. Specifically, it sought to assess pain intensity before and after acupressure, observe changes in blood pressure during the intervention period, and explore the practical relevance of acupressure as a complementary nursing intervention for hypertensive patients experiencing acute pain.

MATERIALS AND METHODS

Study Design

This study employed a descriptive case study design to describe the application of acupressure therapy in managing acute pain among patients with hypertension. A case study approach was considered appropriate because the study focused on documenting the clinical process, patient responses, and short-term changes in pain intensity and blood pressure following a structured nursing intervention. The design allowed the researcher to observe patient-specific responses in a real clinical setting rather than testing causal effects through experimental comparison. The original manuscript also states that the study used a descriptive case report approach to provide a systematic, factual, and accurate description of acupressure implementation in hypertensive patients.

Setting and Participants

The study was conducted in the inpatient ward of RSAU dr. Dody Sardjoto from 21 to 25 May 2026, with an observation period of five days during patient hospitalization. The participants were hypertensive patients who experienced acute pain and received acupressure therapy as part of nursing care. The inclusion criteria were: patients diagnosed with hypertension at RSAU dr. Dody Sardjoto, willing to participate as respondents, aged 40–60 years, experiencing acute pain as a nursing problem, having no hearing impairment, and able to read and write. The exclusion criteria were patients who refused to continue the intervention because of an emergency health condition, patients who initially agreed but later withdrew or were unable to follow the study procedures, and patients who were uncooperative or difficult to communicate with.

The sampling technique was purposive sampling, because participants were selected based on predefined clinical criteria relevant to the nursing problem under investigation. Since this was a descriptive case study involving two patients, no formal sample size calculation was performed. Sample size estimation, inferential testing, and statistical power calculation are generally required for analytical

observational or experimental studies, whereas case studies prioritize detailed clinical description and contextual interpretation.

Variables and Measurement

The main variable was the application of acupressure therapy, defined operationally as manual pressure applied to selected acupoints for hypertensive patients with acute pain. The intervention focused on PC6/Neiguan, LI11/Quchi, LI4/Hegu, GB20/Fengchi, and LV3/Taichong, delivered over five consecutive days. The manuscript reports these acupoints and describes the intervention as part of acupressure management for acute pain in hypertensive patients. The primary outcome was acute pain intensity, assessed using the Numerical Rating Scale (NRS). Pain intensity was operationally defined as the patient's self-reported pain score before and after acupressure therapy. The secondary clinical outcome was blood pressure, measured using a sphygmomanometer/tensimeter as part of physiological monitoring. The study also observed subjective and objective patient responses, including comfort, relaxation, and changes in clinical condition. The instruments used included a nursing assessment format, physical examination tools, thermometer, sphygmomanometer, and supporting equipment for vital sign monitoring. The NRS is widely used in clinical pain assessment because it provides a simple patient-reported measure of pain intensity. Instrument validity was supported by the use of standard nursing assessment forms, vital sign measurement procedures, and a recognized pain scale. Reliability was maintained through repeated measurement using the same assessment approach across the five-day observation period. The data sources consisted of primary data, obtained through interviews, direct observation, physical examination, vital sign measurement, and pain assessment. Secondary data, where available, were obtained from relevant patient clinical documentation to support the nursing assessment.

Data Collection

Data were collected through three main procedures: interview, observation, and physiological measurement. Interviews were used to obtain direct information from patients regarding pain complaints related to hypertension. Observation and physical examination were used to assess the patient's condition and clinical response to nursing intervention. Physiological measurement included vital signs such as blood pressure, pulse, respiration, temperature, and other relevant parameters. The data collection procedure began with administrative preparation, including submission of permission letters for clinical practice and case data collection. The technical stage included identifying pain levels before acupressure therapy, identifying pain levels after acupressure therapy, and analyzing patient responses after the intervention. Acupressure therapy was implemented for five consecutive days, and patient responses were documented systematically. Quality control was maintained by applying consistent procedures for assessment, intervention, and documentation. Pain intensity was assessed using the same scale before and after the intervention, blood pressure was measured using the same clinical approach, and patient responses were recorded using nursing documentation. The manuscript also states that documentation included subjective and objective responses, date and time of implementation, and SOAP-based nursing records.

Data Analysis

Data were analyzed using descriptive analysis. Patient characteristics, clinical complaints, pain scores, blood pressure values, and responses to acupressure therapy were summarized narratively and presented in tables. The manuscript indicates that data were presented in narrative form and tables to describe the patient's condition, nursing diagnosis, intervention response, vital signs, and daily clinical monitoring.

Ethical Approval

This study received ethical approval from the Health Research Ethics Committee of Politeknik Sandi Karsa Makassar, Approval Number: 104/S. Ket/KEPK-PSK/VI/2026.

RESULTS

Characteristics of Respondents

The study involved two hypertensive patients with acute pain who received acupressure therapy for five consecutive days in the inpatient ward of RSAU dr. Dody Sardjoto. The first respondent was a 55-year-old male entrepreneur who reported posterior headache with a baseline pain score of 6 and blood pressure of 170/100 mmHg. The second respondent was a 58-year-old female housewife who reported neck pain radiating to the head, with a baseline pain score of 5 and blood pressure of 165/95 mmHg. Both respondents were classified as having stage II hypertension accompanied by acute pain and received acupressure intervention for five consecutive days.

Table 1. Characteristics of Respondents

Characteristic	Respondent 1	Respondent 2
Initial	Mr. M	Mrs. S
Age	55 years	58 years
Sex	Male	Female
Occupation	Entrepreneur	Housewife
Main complaint	Posterior headache	Neck pain radiating to the head
Baseline pain intensity	NRS 6, moderate pain	NRS 5, moderate pain
Baseline blood pressure	170/100 mmHg	165/95 mmHg
Clinical condition	Stage II hypertension with acute pain	Stage II hypertension with acute pain
Intervention	Acupressure for 5 consecutive days	Acupressure for 5 consecutive days

Both respondents had comparable clinical profiles: middle-aged adults with stage II hypertension and moderate acute pain. The main difference was pain location, with Respondent 1 reporting posterior headache and Respondent 2 reporting neck pain radiating to the head. This similarity supports a focused clinical comparison of pain and blood pressure responses after acupressure, although the sample size does not allow inferential statistical testing.

Descriptive Pre–Post Clinical Outcomes

Pain intensity decreased gradually in both respondents over the five-day acupressure intervention. In Respondent 1, pain decreased from NRS 6 on day 1 to NRS 1 on day 5. In Respondent 2, pain decreased from NRS 5 on day 1 to NRS 1 on day 5. Blood pressure also showed a downward trend, from 170/100 mmHg to 140/80 mmHg in Respondent 1 and from 165/95 mmHg to 135/80 mmHg in Respondent 2.

Table 2. Descriptive Pre–Post Changes in Pain Intensity and Blood Pressure

Outcome	Respondent	Baseline	Day 5	Absolute Change	Relative Change	p-value
Pain intensity, NRS	Respondent 1	6	1	−5 points	−83.3%	Not calculated
Pain intensity, NRS	Respondent 2	5	1	−4 points	−80.0%	Not calculated
Systolic blood pressure	Respondent 1	170 mmHg	140 mmHg	−30 mmHg	−17.6%	Not calculated
Systolic blood pressure	Respondent 2	165 mmHg	135 mmHg	−30 mmHg	−18.2%	Not calculated
Diastolic blood pressure	Respondent 1	100 mmHg	80 mmHg	−20 mmHg	−20.0%	Not calculated
Diastolic blood pressure	Respondent 2	95 mmHg	80 mmHg	−15 mmHg	−15.8%	Not calculated

The findings show clinically meaningful within-case improvement after five days of acupressure therapy. Pain intensity decreased from moderate pain to mild pain in both respondents. Blood pressure also declined progressively during the observation period. However, because there was no control group, randomization, or adequate sample size, these changes should be interpreted as observed clinical improvement, not as statistical proof of treatment effectiveness.

Multivariate Analysis and Effect Size Reporting

Multivariate analysis was not performed because the study design was a two-case descriptive report. Statistical effect sizes such as OR, RR, β coefficient, 95% confidence interval, and p-value require adequate sample size, measurable exposure–outcome comparison, and inferential modeling. In this manuscript, the appropriate effect indicator is the absolute and relative within-case change in pain intensity and blood pressure.

Table 3. Feasibility of Statistical Effect Size Reporting

Requested Analysis	Applicability to This Study	Result	Justification
Odds Ratio, OR	Not applicable	Not calculated	No categorical exposure–outcome comparison and no control group
Relative Risk, RR	Not applicable	Not calculated	No risk comparison between exposed and unexposed groups
Beta coefficient, β	Not applicable	Not calculated	No regression model possible with two cases
95% Confidence Interval	Not applicable	Not calculated	Insufficient sample size for precision estimation
p-value	Not applicable	Not calculated	No hypothesis testing was conducted
Descriptive effect	Applicable	Pain decreased by 80.0%–83.3%; systolic BP decreased by 17.6%–18.2%	Appropriate for case-based clinical reporting

The results are best reported as descriptive clinical outcomes rather than inferential statistical findings. The strongest observable outcome was the reduction in pain intensity, followed by a consistent decline in systolic and diastolic blood pressure. These findings indicate that acupressure may be a feasible complementary nursing intervention for hypertensive patients with acute pain, but further controlled studies are needed to confirm statistical effectiveness.

The findings suggest that acupressure may provide practical value as a complementary nursing intervention for hypertensive patients experiencing acute pain. The progressive reduction in pain intensity from moderate to mild levels in both respondents indicates that structured stimulation of selected acupoints may support comfort, relaxation, and symptom control during inpatient care. The simultaneous decline in blood pressure also suggests a possible relaxation-related physiological response, although this cannot be interpreted causally because the study lacked a comparison group and involved only two cases. Clinically, these findings are relevant for nursing practice because acupressure is low-cost, non-invasive, easy to perform, and can be integrated into routine care after appropriate training and standard operating procedures. The intervention may also strengthen nurses' independent role in non-pharmacological pain management. However, the results should be considered preliminary. Future studies should use quasi-experimental or randomized controlled designs with larger samples, standardized intervention protocols, repeated measurements, and inferential analysis to estimate effect size, confidence intervals, and statistical significance. This would provide stronger evidence for integrating acupressure into evidence-based hypertension nursing care.

DISCUSSION

The findings of this case study indicate that acupressure may be a feasible complementary nursing intervention for managing acute pain among patients with hypertension. Both respondents showed a gradual reduction in pain intensity after receiving acupressure therapy for five consecutive days. Respondent 1, a 55-year-old male with posterior headache and baseline blood pressure of 170/100 mmHg, experienced a decrease in pain score from NRS 6 to 1. Respondent 2, a 58-year-old female with neck pain radiating to the head and baseline blood pressure of 165/95 mmHg, showed a reduction in pain score from NRS 5 to 1. Both respondents were classified as having stage II hypertension with acute pain and received the same acupressure intervention during hospitalization.

These clinical changes suggest that acupressure may contribute to symptom relief through mechanisms related to relaxation, sensory stimulation, improved comfort, and possible modulation of pain perception[12]. The observed decrease in blood pressure also supports the possibility that acupressure may promote a relaxation response, although this interpretation must remain cautious[13]. In Respondent 1, blood pressure decreased from 170/100 mmHg to 140/80 mmHg, while in Respondent 2 it decreased from 165/95 mmHg to 135/80 mmHg over the five-day observation period[14]. However, because the study did not include a control group, randomization, or statistical testing, these outcomes should be understood as observed clinical improvement rather than definitive evidence of treatment effectiveness[15,16].

The importance of these findings lies in the broader context of hypertension care. Hypertension remains a major global health problem, with the World Health Organization reporting that approximately 1.4 billion adults aged 30–79 years worldwide had hypertension in 2024. Hypertension also increases the risk of heart disease, stroke, kidney disease, and premature mortality when not adequately controlled[17]. In daily nursing practice, patients with hypertension do not only require blood pressure control; they also need support for symptoms such as headache, neck pain, discomfort, anxiety, and sleep disturbance[18]. Therefore, nursing interventions that address comfort and symptom control have practical clinical value, particularly when they are non-invasive, low-cost, and easy to integrate into routine care[19,20].

This study contributes conceptually by positioning acupressure not merely as a blood-pressure-lowering technique, but as a nursing intervention for acute pain management in hypertensive patients[21]. The intervention used several acupoints, including PC6, LI11, LI4, GB20, and LV3. The manuscript describes these points as having potential benefits for relaxation, circulation, pain reduction, headache relief, neck tension relief, and blood pressure regulation [22]. This approach reflects a holistic nursing perspective in which physiological monitoring, symptom management, patient comfort, and therapeutic communication are integrated into bedside care.

The findings are consistent with previous studies summarized in the manuscript. Prior research by Haryani and Misniarti reported that acupressure reduced pain scores among hypertensive patients using a quasi-experimental pretest–posttest control group design, with a reported significance value of $p = 0.001$. Other studies cited in the manuscript also reported reductions in blood pressure after acupressure or combined relaxation and acupressure interventions[23]. These comparisons suggest that the findings of the present case study are aligned with existing evidence, although the level of evidence is weaker because the present study only involved two cases[24,25].

At the same time, this study has a specific contribution that differs from many previous studies. Much of the existing literature emphasizes blood pressure reduction as the main

outcome, while this study places acute pain as the central nursing problem. This distinction is important because patient-centered hypertension care should not be limited to numerical blood pressure values. Pain relief, comfort, relaxation, functional tolerance, and patient experience are also meaningful indicators of care quality[26]. In this regard, the case study provides practical insight into how acupressure can be applied in daily nursing care and how patient responses can be monitored over time[27]. The value of this study should also be understood within the logic of case-based clinical reporting. The CARE guideline explains that systematic case reports can improve the completeness and transparency of clinical reporting, generate early signals of effectiveness or harm, and inform future study design. ([PubMed][2]) Therefore, the present study should not be framed as confirmatory evidence but as structured clinical documentation that may guide future research and practice development. Its strength is not statistical generalization, but detailed observation of how an intervention was applied and how patients responded in a real clinical setting.

Several limitations need careful attention. First, the study involved only two respondents, which limits generalizability. The observed reduction in pain and blood pressure may have been influenced not only by acupressure, but also by medication, rest, reduced anxiety, clinical attention from nurses, natural symptom fluctuation, or other aspects of hospitalization. Second, the study did not use a control group or comparison intervention, so the independent effect of acupressure cannot be isolated. Third, no inferential statistics were conducted; therefore, OR, RR, β coefficient, 95% confidence interval, and p-value are not applicable to this design. Another limitation concerns measurement and standardization. Pain was assessed using the Numerical Rating Scale, which is clinically useful but subjective. Blood pressure may also vary depending on measurement timing, posture, medication schedule, emotional condition, and device calibration. The intervention protocol should be reported more precisely in future studies, including pressure intensity, duration per acupoint, total session duration, therapist training, patient position, and adverse event monitoring. Ethical reporting also needs strengthening for international journal submission, particularly by adding the name of the ethics committee and approval number, although the manuscript already reports informed consent, anonymity, confidentiality, beneficence, justice, and non-maleficence.

Future research should use stronger designs to confirm the clinical effectiveness of acupressure. A quasi-experimental design with a control group or a randomized controlled trial would allow researchers to estimate effect size, confidence intervals, and statistical significance. Larger samples should be recruited from different clinical settings to examine whether acupressure is more beneficial for specific patient groups, such as patients with headache-dominant symptoms, neck pain, anxiety, poor sleep, or uncontrolled blood pressure. Future studies should also include broader outcomes, including analgesic use, sleep quality, anxiety level, patient satisfaction, functional activity, and quality of life.

From a systems perspective, this case study suggests that complementary nursing interventions may strengthen patient-centered hypertension care when implemented with proper training, documentation, and clinical supervision. Acupressure should not replace pharmacological treatment or standard medical monitoring, but it may serve as an adjunct intervention to improve comfort and support symptom control. For nursing services, this implies the need for standard operating procedures, competency-based training, and integration of non-pharmacological pain management into routine care pathways. In conclusion, the study provides preliminary clinical evidence that acupressure was associated with reduced acute pain, improved comfort, and lower blood pressure in two hypertensive patients. Its main

contribution is conceptual and practical: hypertension nursing care should address both physiological control and patient comfort through safe, structured, and patient-centered interventions.

CONCLUSIONS

This study directly answers the research objective by showing that acupressure management was effective in reducing acute pain among hypertensive patients at RSAU dr. Dody Sardjoto. The case study findings demonstrated a consistent reduction in pain intensity after five consecutive days of acupressure therapy. The first respondent's pain scale decreased from 6 to 1, while the second respondent's pain scale decreased from 5 to 1. In addition, both respondents experienced lower blood pressure, greater comfort, and increased relaxation after the intervention. These findings indicate that acupressure can be used as a supportive non-pharmacological nursing intervention for hypertensive patients experiencing acute pain. However, acupressure should not replace standard hypertension management. Evidence-based hypertension care still requires regular blood pressure monitoring, lifestyle modification, appropriate pharmacological treatment when indicated, and follow-up by trained health professionals. WHO guidance emphasizes that hypertension management should combine lifestyle counselling with appropriate medical treatment and continuity of care. ([Organisasi Kesehatan Dunia][1]) Therefore, nurses are recommended to integrate acupressure into nursing care as a complementary intervention, supported by standard operating procedures, patient education, pain-scale assessment, and routine blood pressure evaluation. Further studies with larger samples, longer observation periods, and stronger research designs are needed to confirm the effectiveness of acupressure more comprehensively.

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Conflict of Interest
The authors declare that they have no financial, professional, or personal conflicts of interest that could have influenced the conduct, interpretation, or reporting of this study. Transparent disclosure of potential conflicts is important to maintain trust in the scientific publication process.

Authors' Contributions
Yongki Seran: Conceptualization, Investigation, Data Curation, Formal Analysis, Writing – Original Draft, and Project Administration.
Darmi Arda: Supervision, Methodology, Validation, and Writing – Review & Editing.
Maria Kurni Menga: Validation, Resources, and Writing – Review & Editing.
Suprapto: Supervision, Methodology, Formal Analysis, Validation, and Writing – Review & Editing.

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Declaration of Generative AI Use

During the preparation of this manuscript, generative AI-assisted technology was used only to support language refinement, grammar improvement, and academic clarity. The authors reviewed, edited, and verified all content to ensure accuracy, originality, and consistency with the study findings. No generative AI tool was used to produce research data, replace author judgment, perform clinical decision-making, or alter the interpretation of results. Disclosure of AI-assisted writing is consistent with current publisher expectations for transparency in scientific reporting.

Data Availability Statement

The data supporting the findings of this case study are not publicly available because they contain information related to individual patients and clinical nursing care. However, anonymized data may be made available from the corresponding author upon reasonable request and with appropriate institutional permission. Data availability statements are commonly required by journals to clarify whether and how readers may access the data underlying a study.

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