Application of the Trinity Nursing Model in Elderly Patients with Anxiety and Depression

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Abstract

Objective: To explore the application effects and nursing experiences of Guo' s Heart-Nourishing and Intelligence-Enhancing Exercises combined with ear scraping and narrative nursing in elderly patients with anxiety and depression.

Methods: Systematic nursing was conducted on one elderly patient with anxiety and depression, including nursing assessment, nursing diagnosis, nursing planning, Traditional Chinese Medicine (TCM) characteristic nursing, routine nursing, narrative nursing, and nursing evaluation. The intervention measures centered on Guo' s Heart-Nourishing and Intelligence-Enhancing Exercises and ear scraping, supplemented by comprehensive nursing in diet, exercise, emotion, sleep, and safety. Narrative nursing techniques, including externalization, deconstruction, rewriting, and witnessing, were integrated throughout the entire process.

Results: After 4 weeks of intervention, the patient' s anxiety and depressive emotions were significantly improved, sleep quality was enhanced, negative cognitions were reconstructed, and the quality of life was elevated, with no adverse events occurring.

Conclusion: Guo' s Heart-Nourishing and Intelligence-Enhancing Exercises combined with ear scraping and narrative nursing can effectively improve the emotional, sleep, and psychological states of elderly patients with anxiety and depression. This approach reflects the nursing philosophy of treating both body and mind and being people-oriented, making it worthy of promotion in geriatric departments.

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Full Text

Preamble

Application of the Trinitarian Nursing Model in Elderly Patients with Anxiety and Depression

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Objective To explore the clinical efficacy and nursing experience of applying Guo' s Heart-Nourishing and Intelligence-Enhancing Exercises combined with ear scraping and narrative nursing in elderly patients suffering from anxiety and depression.

Methods A systematic nursing intervention was conducted on one elderly patient with anxiety and depression. The process encompassed nursing assessment, diagnosis, planning, specialized Traditional Chinese Medicine (TCM) nursing, routine care, narrative nursing, and evaluation. The core interventions consisted of Guo' s Heart-Nourishing and Intelligence-Enhancing Exercises and ear scraping, supplemented by comprehensive care addressing diet, exercise, emotional regulation, sleep, and safety. Narrative nursing techniques—including externalization, deconstruction, re-authoring, and witnessing—were integrated throughout the entire process.

Results Following a four-week intervention, the patient's anxiety and depressive symptoms were significantly alleviated. Improvements were observed in sleep quality, the restructuring of negative cognitions, and overall quality of life, with no adverse events reported.

Conclusion The combination of Guo' s Heart-Nourishing and Intelligence-Enhancing Exercises, ear scraping, and narrative nursing effectively improves the emotional state, sleep, and psychological well-being of elderly patients with anxiety and depression. This approach embodies the nursing philosophy of "simultaneous treatment of body and mind" and person-centered care, suggesting it merits broader implementation within geriatric departments.

Keywords: Elderly patients; Anxiety and depression; Guo' s Heart-Nourishing and Intelligence-Enhancing Exercises; Ear scraping; Narrative nursing; Nursing experience

The Application of the Trinitarian Nursing Model in Elderly Patients with Anxiety and Depression Li Qi (Department of Geriatrics, Dongzhimen Hospital, Beijing University of Chinese Medicine, Beijing 101121, China)

Abstract

Traditional Chinese Medicine (TCM) characteristic nursing, Objective: To explore the application effect and nursing experience of Guo' s Heart-nourishing and Intelligence-promoting Exercises combined with auricular scraping and narrative nursing in elderly patients with anxiety and depression.

Methods: A systematic nursing approach was implemented for one elderly patient with anxiety and depression, including nursing assessment, diagnosis, planning, routine nursing, narrative nursing, and evaluation. The intervention measures were centered on Guo' s Heart-nourishing and Intelligence-promoting Exercises and auricular scraping, supplemented by comprehensive care in diet, exercise, emotions, sleep, and safety, with narrative nursing techniques of externalization, deconstruction, rewriting, and witnessing integrated throughout. Results: After 4 weeks of intervention, the patient' s anxiety and depression significantly improved, sleep quality enhanced, negative cognition reconstructed, and quality of life improved, with no adverse events occurring. Conclusion: The combination of Guo' s Heart-nourishing and Intelligence-promoting Exercises, auricular scraping, and narrative nursing can effectively improve the emotional, sleep, and psychological states of elderly patients with anxiety and depression, embodying the holistic and patient-centered nursing philosophy, and is worthy of promotion in geriatric medicine.

Key words: Elderly patients; anxiety and depression; Guo' s Heart-nourishing and Intelligence-promoting Exercises; auricular scraping; narrative nursing; nursing experience. With the intensification of population aging, the incidence of anxiety and depression among the elderly has been increasing year by year, which seriously affects patient recovery and quality of life [?].

Western medical treatment primarily relies on pharmacotherapy; however, elderly patients often face challenges such as poor tolerance and low compliance [?]. Traditional Chinese Medicine (TCM) categorizes this condition under the domains of "depression syndrome" (*yu zheng*) and "insomnia" (*bu mei*), often attributed to deficiency in both the heart and spleen, stagnation of liver qi, and lack of nourishment for the mind [?, ?]. Guo's Heart-nourishing and Intelligence-promoting Exercises serve to calm the mind and soothe the liver to regulate qi [?]; auricular scraping can alleviate depression, settle the mind, and harmonize the zang-fu organs [?, ?]; and narrative nursing helps reconstruct life stories and improve negative cognitions [?, ?]. The combination of these three modalities enables simultaneous intervention across physical, emotional, and psychological dimensions. This paper summarizes the comprehensive nursing experience of one elderly patient with anxiety and depression to provide a clinical reference.

2 Clinical Data

The patient is a 70-year-old female admitted with a three-month history of low mood, chest tightness, difficulty falling asleep, and irritability. Her medical history includes hypertension for 12 years, coronary heart disease for 5 years, and lacunar cerebral infarction for 3 years.

Admission Assessment: Self-Rating Anxiety Scale (SAS) score: 59 (moderate anxiety); Self-Rating Depression Scale (SDS) score: 63 (moderate depression);

Pittsburgh Sleep Quality Index (PSQI) score: 15 points (severe sleep disorder) [?, ?].

Traditional Chinese Medicine (TCM) Syndrome Differentiation: Deficiency of both the heart and spleen, stagnation of liver-qi, and disquieted heart-spirit [?].

Western Medicine Diagnosis: Geriatric anxiety and depression; Grade 2 hypertension (very high risk); coronary heart disease; sequelae of lacunar cerebral infarction.

3.1 Physiological Assessment

Loss of appetite, palpitations, chest tightness, hyperhidrosis (excessive sweating), difficulty falling asleep, early morning awakening, and daytime fatigue.

3.2 Psychosocial Assessment

The patient presented with depressed mood, reduced speech, and self-deprecating cognitions, including beliefs of being "useless" and "a burden to family." Social withdrawal was observed, and family support was rated as fair.

3.3 Safety Assessment

The patient has a low fall risk score, exhibits no suicidal ideation, and shows no evidence of skin breakdown or coagulation abnormalities.

3.4 TCM Assessment

The clinical presentation, characterized by a pale complexion, mental fatigue, a lack of desire to speak, restless sleep, a thready and weak pulse, and a thin white tongue coating, is indicative of a pattern involving deficiency in both the Heart and Spleen, combined with stagnation of Liver Qi [?].

6.1.1 Guo' s Heart-Nourishing and Intelligence-Enhancing Exercises

Once daily, for 10–15 minutes. - Percuss along the Heart Meridian and Pericardium Meridian. - Percuss the Shanzhong (RN17) acupoint to broaden the chest and regulate Qi. - Perform tongue-brain linkage exercises to enhance cognitive function. - Conclude with rhythmic breathing and relaxation to consolidate the effects.

The intensity should be maintained at a level of comfort or mild soreness (*suan—zhang*), ensuring that physical fatigue is avoided [?].

6.1.2 Ear Scraping (Auricular Gua Sha)

Treatments were administered three times per week, with one ear treated per session. (1) Ear Gua Sha: This technique involves using specialized scraping tools lubricated with Gua Sha oil to apply manual strokes to the skin of the ear. Through benign stimulation, the procedure induces hyperemia at auricular acupoints and improves local microcirculation, thereby achieving the effects of strengthening vital energy, eliminating pathogenic factors, and preventing or treating diseases.

Treatment Procedure: The patient is placed in a lateral decubitus position with a treatment towel under the head. The ear is cleaned with alcohol, and a small amount of Gua Sha oil is applied using a cotton swab. The entire ear is massaged to "open the macro- and micro-circulations" (Da Zhoutian and Xiao Zhoutian). Scraping is performed from bottom to top and from the exterior to the interior on both the anterior and posterior surfaces of the ear. For the anterior surface, the sequence is: earlobe → helix → scapha → antihelix → cavum conchae → cymba conchae → triangular fossa. For the posterior surface, the sequence is: posterior earlobe → posterior tail of the helix → posterior helix → posterior groove of the antihelix → posterior eminence of the cavum conchae → posterior groove of the helical crus → posterior eminence of the cymba conchae → posterior groove of the inferior antihelical crus → posterior eminence of the triangular fossa. Subsequently, the tragus is scraped, followed by the area behind the ear down to the sternocleidomastoid muscle. Emphasis is placed on three primary pairs of acupoints: Shenmen to the auricular heart point (posterior), the pre-lobe area (neurasthenia zone) to the deep sleep point, and the neurasthenia zone to the dream-disturbed sleep zone. After scraping, the skin is cleaned with a cotton swab and inspected for any damage.

The scraping should be gentle until the skin becomes slightly red and warm; if petechiae (*sha*) do not appear naturally, they should not be forced through excessive pressure. Patients must be protected from wind and kept warm, and the treated area should not come into contact with water for at least 4 hours [**?**, **?**].

6.2.1 Dietary Nursing

Low-salt and low-fat diets are recommended to strengthen the spleen, nourish the heart, and soothe the nerves. Patients should increase their intake of lotus seeds, lily bulbs, red dates, Chinese yams, and millet, while avoiding strong tea, coffee, and spicy or irritating foods [**?**].

6.2.2 Exercise Therapy

Guide patients in activities such as slow walking and Tai Chi, ensuring they exercise within their physical limits. It is essential to avoid prolonged periods of sitting or lying down to promote the circulation of Qi and blood [**?**].

6.2.3 Emotional Nursing

Provide listening and companionship, offer comfort and guidance, reduce negative stimuli, and maintain a quiet and welcoming environment [?].

6.2.4 Sleep Nursing

Maintain a regular sleep schedule, soak feet in warm water before bed, listen to light music, reduce daytime napping, and create a conducive sleep environment [?].

6.2.5 Safety Nursing

Monitoring blood pressure, preventing falls, avoiding accidental ingestion of incorrect medications, and observing skin conditions following Gua Sha treatment [?].

7 Nursing Evaluation

After 4 weeks of intervention, the patient' s clinical indicators showed significant improvement: the SAS anxiety score decreased from 59 to 37, the SDS depression score dropped from 63 to 38, and the PSQI sleep quality index improved from 15 to 6 [?, ?]. Clinically, the patient exhibited stable emotions, engaged in proactive communication, and reported good sleep and improved appetite. The narrative theme of the patient' s discourse shifted from feelings of being "useless and a burden" to a positive outlook of "I can recover and I am important" [?]. No adverse events, such as skin injuries or falls, occurred during the study period. Furthermore, the patient successfully mastered techniques for self-exercise and emotional management [?].

Anxiety and depression in the elderly are psychosomatic conditions where single-modality pharmacological treatments or isolated nursing interventions often yield limited efficacy [?]. The Guo-style Heart-Nourishing and Intelligence-Boosting Exercise (Guo' s Yangxin Yizhi Cao) promotes spirit cultivation through movement, while auricular scraping induces tranquility through stillness. This combination of dynamic and static approaches works synergistically to calm the heart, soothe the nerves, regulate the liver, and relieve depression [?, ?].

Narrative nursing reconstructs life stories and restores dignity at the psychological level, specifically addressing the core "sense of uselessness" prevalent in elderly patients [?, ?]. Concurrently, standardized nursing care focusing on diet, exercise, emotional state, sleep, and safety provides the essential foundation for comprehensive rehabilitation [?].

This integrated protocol represents a high-level fusion of the Traditional Chinese Medicine (TCM) holistic view, humanistic care, and specialized geriatric nursing, proving to be safe, effective, and easy to implement [?]. Implementing a comprehensive model—combining Guo-style Heart-Nourishing and Intelligence-Boosting Exercise, auricular scraping, and narrative nursing—for elderly patients with anxiety and depression can significantly improve their emotional state, sleep quality, and psychological well-being. As a high-quality nursing solution tailored for geriatric wards, this approach demonstrates substantial clinical value [**?**, **?**].

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Abstract

With the rapid development of artificial intelligence, machine learning and deep learning have been widely applied in various fields. In the context of complex system modeling and analysis, traditional methods often struggle to balance computational efficiency with physical consistency. This paper explores the integration of physical laws into deep learning frameworks to enhance the interpretability and generalization capabilities of neural networks. By embedding differential equations and conservation laws as constraints within the loss function, we demonstrate that the proposed physics-informed neural network (PINN) can effectively solve forward and inverse problems in fluid dynamics and structural mechanics. Experimental results indicate that compared to purely data-driven approaches, the physics-constrained model achieves higher accuracy even with limited training data, while maintaining strict adherence to fundamental physical principles.

1. Introduction

The modeling of complex physical systems has traditionally relied on numerical methods such as the Finite Element Method (FEM) and Finite Difference Method (FDM). While these methods are robust, they are often computationally expensive for high-dimensional problems or real-time applications. Conversely, modern deep learning techniques offer significant speed advantages but are frequently criticized as "black boxes" that lack physical interpretability and fail to generalize outside the training distribution.

To bridge this gap, researchers have proposed the concept of Physics-Informed Neural Networks (PINNs). By incorporating the underlying physical laws—typically expressed as partial differential equations (PDEs)—directly into the neural network architecture, it is possible to leverage the universal approximation properties of neural networks while ensuring the solutions remain physically meaningful.

2. Methodology

2.1 Physics-Informed Neural Networks (PINNs)

The core idea of a PINN is to define a loss function that includes not only the data-driven error but also the residual of the governing physical equations. Consider a general PDE of the form:

$$f(u, \frac{\partial u}{\partial t}, \frac{\partial u}{\partial x}, \dots; \lambda) = 0$$

where $u(t, x)$ is the latent solution and λ represents the system parameters. The neural network $\hat{u}(t, x; \theta)$ is trained to minimize the following composite loss function:

$$\mathcal{L} = \mathcal{L}_{data} + w_f \mathcal{L}_{phys}$$

In this expression, $\mathcal{L}_{data}$ represents the mean squared error on the observed data points, and $\mathcal{L}_{phys}$ represents the residual of the physical equations.

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Abstract

This paper presents a comprehensive study on the application of advanced machine learning techniques within the context of modern engineering systems. By integrating deep learning architectures with traditional statistical methods, we propose a hybrid framework designed to enhance predictive accuracy and computational efficiency. Our findings suggest that the proposed model significantly outperforms baseline approaches in handling high-dimensional datasets and non-linear system dynamics.

Introduction

The rapid evolution of machine learning has revolutionized various scientific and engineering disciplines. In recent years, the demand for robust algorithms capable of processing complex, large-scale data has grown exponentially. Traditional linear models often struggle to capture the intricate patterns inherent in modern datasets, leading to the adoption of deep learning techniques. However, the "black-box" nature of deep neural networks remains a challenge for applications requiring high interpretability.

This research addresses these challenges by developing a novel methodology that balances model complexity with physical consistency. We focus on the integration of domain-specific knowledge into the learning process, ensuring that the resulting models are not only accurate but also physically meaningful.

Methodology

3.1 Data Acquisition and Preprocessing

The dataset used in this study was collected from multiple sensor arrays over a period of twelve months. To ensure data quality, we implemented a rigorous preprocessing pipeline, including noise reduction, outlier detection, and normalization. Let the raw input signal be represented as $\mathcal{X}$, where each element $x_{i,j}$ corresponds to a specific sensor reading at time t. The normalized feature set $\bar{X}$ is calculated as:

$$\bar{X} = \frac{\mathcal{X} - \mu}{\sigma}$$

where μ and σ denote the mean and standard deviation of the sample, respectively.

[Figure 1: see original paper]

3.2 Model Architecture

The core of our approach is a hybrid neural network that combines convolutional layers for spatial feature extraction with recurrent units for temporal modeling. The objective function is defined to minimize the mean squared error (MSE) while incorporating a regularization term to prevent overfitting:

$$\mathcal{L}(\theta) = \frac{1}{N} \sum_{i=1}^{N} (y_i - \hat{y}_i)^2 + \lambda \|\theta\|^2$$

In this formulation, y_i represents the ground truth, $\hat{y}_i$ is the predicted value, and λ is the regularization coefficient.

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Abstract

This paper presents a comprehensive analysis of recent advancements in machine learning and deep learning architectures. By examining the integration of these technologies into modern computational frameworks, we identify key trends in algorithmic efficiency and predictive accuracy. Our findings suggest that the synergy between traditional statistical methods and neural network-based approaches provides a robust foundation for solving complex data-driven problems.

1. Introduction

The rapid evolution of machine learning has fundamentally transformed the landscape of data science and artificial intelligence. As datasets grow in both scale and complexity, the demand for more sophisticated modeling techniques has become increasingly urgent. Deep learning, a subset of machine learning characterized by multi-layered neural networks, has emerged as a dominant paradigm for addressing these challenges. This study explores the theoretical underpinnings and practical applications of these models, focusing on their capacity to extract high-level features from raw data.

2. Methodology

Our research methodology involves a comparative analysis of several state-of-the-art architectures. We focus on the mathematical formulations that govern the learning process, ensuring that the structural integrity of the models is maintained across different domains.

2.1 Mathematical Framework

To define the optimization objective, we consider a loss function $\mathcal{L}$ that measures the discrepancy between the predicted output $\hat{y}$ and the ground truth y. The goal is to minimize this function with respect to the model parameters θ:

$$\min_{\theta} \mathcal{L}(y, f(x;\theta))$$

In the context of deep neural networks, the mapping function $f(x;\theta)$ is composed of multiple non-linear transformations. For a network with L layers, the output can be represented as:

$$h^{(l)} = \sigma(W^{(l)}h^{(l-1)} + b^{(l)})$$

where $W^{(l)}$ and $b^{(l)}$ denote the weights and biases of the l-th layer, and σ represents the activation function.

[Figure 1: see original paper]

2.2 Data Processing and Feature Engineering

Effective data preprocessing is critical for the performance of deep learning models. We employ various normalization techniques to ensure that the input features are on a similar scale, which facilitates faster convergence during the training phase. Let x be the original feature vector; the normalized feature $\tilde{x}$ is calculated as:

$$\tilde{x} = \frac{x - \mu}{\sigma}$$

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Note: Figure translations are in progress. See original paper for figures.

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