

ORIGINAL RESEARCH

# Application Effects of Individualized Diet Nursing Combined with the Modified Glasgow-Blatchford Scoring System in Upper Gastrointestinal Bleeding

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## ABSTRACT

**Background** • Upper gastrointestinal bleeding encompasses bleeding arising from esophageal, gastric, duodenal, or pancreaticobiliary lesions above the Treitz ligament. Research indicates a close association between improper diet and upper gastrointestinal bleeding.

**Objective** • This study aims to investigate the application effects of individualized diet nursing combined with the modified Glasgow-Blatchford scoring system in patients with upper gastrointestinal bleeding.

**Design** • A randomized controlled study was conducted.

**Setting** • The study took place at the First Hospital of Hebei Medical University.

**Participants** • From January 2021 to October 2022, 80 patients with upper gastrointestinal bleeding were selected at our hospital. Using a random number table, they were divided into a control group and an observation group, each comprising 40 cases.

**Interventions** • The control group received routine nursing, while the observation group received individualized diet nursing based on the Glasgow-

Blatchford score in addition to routine nursing.

**Primary Outcome Measures** • (1) bleeding frequency, hemostasis time, and hospital stay; (2) re-bleeding rate; (3) Glasgow-Blatchford scores; (4) quality of life; and (5) nursing satisfaction.

**Results** • In the observation group, bleeding frequency, hemostasis time, and hospital stay significantly reduced compared to the control ( $P < .05$ ). Post-nursing, the observation group had a lower re-bleeding rate ( $\chi^2=11.25$ ,  $P < .05$ ). Before nursing, no statistical differences existed in Glasgow-Blatchford and quality of life scores between groups ( $P > .05$ ). Post-nursing, both groups saw reduced Glasgow-Blatchford scores, more so in the observation group ( $P < .05$ ). Quality of life scores increased in both, more notably in the observation group ( $P < .05$ ). Overall nursing satisfaction was higher in the observation group ( $P < .05$ ).

**Conclusions** • Individualized diet nursing, based on the Glasgow-Blatchford score, improves cure rates and quality of life and warrants promotion. (*Altern Ther Health Med*. [E-pub ahead of print.]

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## INTRODUCTION

Upper gastrointestinal (UGI) bleeding is characterized by hemorrhage originating from lesions above the Treitz ligament, encompassing the esophagus, stomach, duodenum, or pancreaticobiliary regions.<sup>1</sup> The main clinical presentations

involve hematemesis and/or melena, often occurring in combination with severe digestive diseases.<sup>2</sup> The prevalence of UGI bleeding has seen a notable increase in recent years, paralleling the rising incidence of conditions such as peptic ulcer, acute gastric mucosal lesions, liver cirrhosis, and other disorders affecting the digestive system.<sup>3</sup> Understanding and managing UGI bleeding are crucial aspects of contemporary healthcare, given its association with a spectrum of gastrointestinal pathologies.

This disease exhibits characteristics of high risk and elevated mortality, drawing significant attention from the medical community.<sup>4</sup> Contemporary interventions for UGI bleeding encompass pharmaceutical approaches, hemostasis utilizing three-cavity balloon tube compression, direct endoscopic vision for hemostasis, vascular interventional therapy, and surgical interventions.<sup>5</sup>

In recent times, numerous researchers have conducted diverse investigations into the nursing model for gastrointestinal

bleeding, delving into the associated risk factors of UGI bleeding and assessing its risk severity.<sup>6</sup> Findings indicate that inadequate dietary practices rank as the primary cause of UGI bleeding in the young and middle-aged demographic.<sup>7</sup> Consequently, implementing dietary nursing for patients with UGI bleeding holds significant importance in alleviating the condition and fostering disease recovery.

Individualized dietary nursing is carefully tailored to the unique characteristics of each patient, considering factors such as body mass, nutritional requirements, and individual needs. This approach adheres to quantified dietary standards to guarantee the intake of diverse nutrients, ensuring a balanced nutritional profile and enhancing overall body immunity.<sup>8</sup> The application of individualized dietary nursing extends across a spectrum of diseases, including type 2 diabetes mellitus and hypertension,<sup>9</sup> as well as irritable bowel syndrome,<sup>10</sup> demonstrating creditable clinical efficacy.

The Glasgow-Blatchford scoring system, developed through experimentation in 2000 by British scholar Oliver Blachford et al.,<sup>11</sup> emerges as a user-friendly and easily applicable tool in clinical settings. This scoring system, known for its simplicity and ease of calculation, holds substantial relevance in medical practice, providing clinicians with a practical and effective means of assessment.<sup>12</sup> Assessment is primarily based on the patient's systolic blood pressure, heart rate, blood urea, hemoglobin levels, presence of black stool, and considerations of liver disease and heart failure.<sup>13</sup>

This scoring system serves as a valuable means for risk classification among patients with UGI bleeding and demonstrates robust predictive capabilities for guiding clinical interventions.<sup>14</sup> Therefore, this study investigates the impact of combining individualized diet nursing with the modified Glasgow-Blatchford scoring system on patients with upper gastrointestinal bleeding, shedding light on potential advancements in personalized care for this critical condition.

## DATA AND METHODS

### Study Design

We implemented a randomized controlled design at the First Hospital of Hebei Medical University. The investigation spanned from January 2021 to October 2022, during which a total of 80 patients experiencing UGI bleeding were carefully selected. Employing a random number table method, these patients were stratified into two distinct groups: a control group (CG) and an observation group (OG), each comprising 40 cases.

### Inclusion and Exclusion Criteria

Inclusion criteria were as follows: (1) Patients meeting the diagnostic criteria for acute UGI bleeding through gastroscopy and other clinical examinations; (2) All patients or their families were adequately informed and provided signed informed consent; (3) The basic data of the patients were complete. Exclusion criteria were as follows: (1) Patients with mental disorders, inability to communicate normally; and (2) complications with other serious medical or surgical diseases.

### Standard Nursing Practices and Psychological Support: Control Group (CG)

The CG underwent standard nursing practices that incorporated various essential components. These included routine psychological counseling aimed at providing emotional support and addressing mental well-being. Health education plays a pivotal role in disseminating crucial information to patients, promoting awareness and understanding of their condition. Ward nursing, a fundamental aspect of patient care, ensured the implementation of routine medical procedures and monitoring. Additionally, medication guidance was provided, ensuring patients were well-informed about their prescribed treatments.

### Tailored Diet Nursing Based on Glasgow-Blatchford Score: Observation Group (OG)

In the OG, individualized diet nursing, built upon routine nursing, was implemented using the Glasgow-Blatchford scoring system.

**Risk Stratification.** Patients were categorized based on risk: Low risk ( $\leq 6$  points), moderate risk (7-9 points), and high risk ( $\geq 10$  points).

**Individualized Diet Plan.** The dietary plan for patients with low risk involved easily digestible, non-stimulating, and nutritionally rich foods such as steamed bread, bread, rice porridge, noodles, winter gourd, and tomatoes, distributed across three daily meals. This tailored approach aimed to optimize nutritional intake while considering the specific risk profile of each patient, aligning with the broader objective of enhancing patient care and outcomes.

**Dietary Guidelines for Moderate-Risk Patients.** Patients identified with moderate risk were prescribed a semi-liquid diet, incorporating safe and easily digestible options. This dietary regimen included items such as apple puree, vegetable juice, steamed meatballs, and steamed fish balls, all chosen for their non-irritating nature and minimal residue. To enhance nutritional intake, the plan involved a proper adjustment in salt and protein content. This tailored diet was structured to be consumed throughout the day, offering a total of five meals. The focus on both safety and nutritional balance represents a commitment to optimizing dietary support for patients at moderate risk.

**Nutritional Support for High-Risk Patients.** In addressing the needs of patients identified as high-risk, a swift and effective intervention was implemented through intravenous supplementation of essential nutrients to ensure optimal blood and electrolyte levels. Anemic patients were provided with fresh blood as needed. Once bleeding was essentially controlled, a transition to a fluid diet was initiated. During this phase, a balanced nutritional intake was facilitated by offering 150 mL servings of milk, lotus root powder, fruit juice, and vegetable juice per meal, with a total of six meals provided daily. This regimen aimed not only to sustain adequate fluid and electrolyte levels but also to contribute to the overall recovery and well-being of high-risk patients.

### Observation Indexes

A set of diverse observation indexes was employed to assess treatment efficacy and patient well-being comprehensively.

### Bleeding Frequency, Hemostasis Time, and Hospital Stay Comparison

The study compared bleeding frequency, hemostasis time, and hospital stay between the CG and the OG during the treatment phase.

**Re-bleeding Rate Comparison.** After nursing, the re-bleeding rates in both groups were carefully compared to evaluate the effectiveness of the applied interventions.

**Glasgow-Blatchford Scores Comparison.** The study compared Glasgow-Blatchford scores<sup>11</sup> in both groups, serving as a critical indicator of the severity and prognosis of upper gastrointestinal bleeding.

**Quality of Life Assessment Using WHOQOL-BREF.** The World Health Organization Quality of Life Assessment Brief Scale (WHOQOL-BREF)<sup>15</sup> was implemented to assess the patient's quality of life. This comprehensive evaluation included four domains: physiology, psychology, environment, and social relations, with scores ranging from 0 to 100 points. A higher score indicated a higher quality of life.

**Nursing Satisfaction Assessment Using NSNS.** The evaluation of nursing satisfaction was conducted employing the Newcastle Satisfaction with Nursing Scale (NSNS).<sup>16</sup> This scale comprehensively measures various aspects of nursing service, encompassing the time dedicated by nurses to patient care, the overall working proficiency of nurses, and the emotional support provided by nurses when required.

The NSNS utilized a five-tiered rating system for evaluating nursing satisfaction levels: (1) Very Dissatisfied (19-37 points): Signifying a markedly low level of satisfaction; (2) Dissatisfied (38-56 points): Indicating a below-average satisfaction level; (3) General (57-75 points): Representing a moderate level of satisfaction; (4) Satisfied (76-94 points): Reflecting an above-average satisfaction level; (5) Very Satisfied (95 points): Signifying an exceptionally high level of satisfaction. The total nursing satisfaction was determined using the formula: Total Nursing Satisfaction=(Number of Very Satisfied + Number of Satisfied /Total Number)×100%

This assessment provided a percentage-based measure, offering a comprehensive and quantitative understanding of the overall satisfaction experienced by patients with nursing services.

### Statistical Analysis

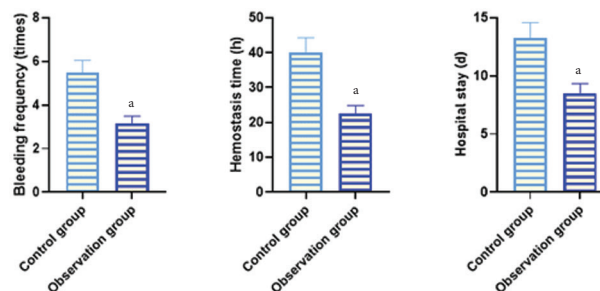
Data analysis was conducted using SPSS 19.0 software (IBM, Armonk, New York, USA). For normally distributed measurement data, results were presented as ( $\bar{x} \pm s$ ), and analysis was carried out using the *t* test. Count data were expressed as percentages (%), and group comparisons were performed using the  $\chi^2$  test. A significance level of  $P < .05$  was applied to determine statistical significance. This precise statistical approach ensured the accurate interpretation and reliability of the study findings.

**Table 1.** General Data of Patients in Both Groups

Index	Control Group (n=40)	Observation Group (n=40)	P value
Gender (male/female)	20/20	19/21	>.05
Average Age (years)	52.23±5.29	52.22±5.31	>.05
Degree of Risk	Low Risk	18	>.05
	Moderate Risk	15	
	Severe Risk	7	
Cause of Bleeding	Gastric Ulcer	11	>.05
	Duodenal Bulbar Ulcer	14	
	Esophageal And Gastric Varices Rupture	13	
	Stress Ulcer	2	
		1	

Note: Data presented as mean±standard deviation or number. *P* values were calculated using the appropriate statistical tests as indicated.  $P < .05$  was considered statistically significant.

**Figure 1.** Comparison of Bleeding Frequency, Hemostasis Time, and Hospital Stay between Control and Observation Groups



<sup>a</sup> $P < .05$  are considered statistically significant.

Note: The figure illustrates the comparative analysis of key treatment parameters, including bleeding frequency, hemostasis time, and hospital stay, between the Control Group (CG) and Observation Group (OG).

## RESULTS

### Comparison of Baseline Characteristics

No significant differences were observed in general data between the two groups ( $P > .05$ ); refer to Table 1.

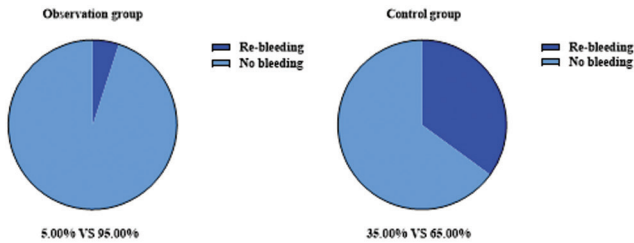
### Comparison of Bleeding Frequency, Hemostasis Time, and Hospital Stay

In the OG, the bleeding frequency, hemostasis time, and hospital stay were ( $3.15 \pm 0.34$ ) times, ( $22.59 \pm 2.31$ ) hours, and ( $8.52 \pm 0.83$ ) days, respectively. Notably, these durations were significantly shorter when compared to those in the CG, which were ( $5.48 \pm 0.56$ ) times, ( $40.13 \pm 4.15$ ) hours, and ( $13.23 \pm 1.35$ ) days ( $P < .05$ ); see Figure 1. This comparative analysis emphasizes the favorable outcomes associated with the application of individualized diet nursing combined with the modified Glasgow-Blatchford scoring system in the management of upper gastrointestinal bleeding.

### Re-bleeding Rate After Nursing in Both Groups

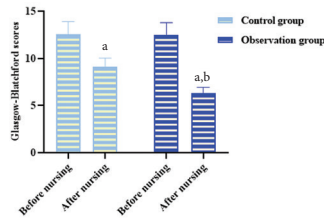
Following the nursing intervention, the re-bleeding rate in the OG was 5.00%, demonstrating a significant reduction compared to the CG, where the re-bleeding rate was 35.00% ( $\chi^2=11.25$ ,  $P < .05$ ); see Figure 2. This marked difference highlights the effectiveness of the applied strategies, emphasizing the positive impact of individualized diet nursing combined with the modified Glasgow-Blatchford

**Figure 2.** Re-bleeding Rate Comparison after Nursing in Control and Observation Groups



Note: Figure 2 depicts the comparison of re-bleeding rates following nursing interventions in the Control Group (CG) and Observation Group (OG).  $P < .05$  were considered statistically significant.

**Figure 3.** Comparison of Glasgow-Blatchford Scores in Control and Observation Groups

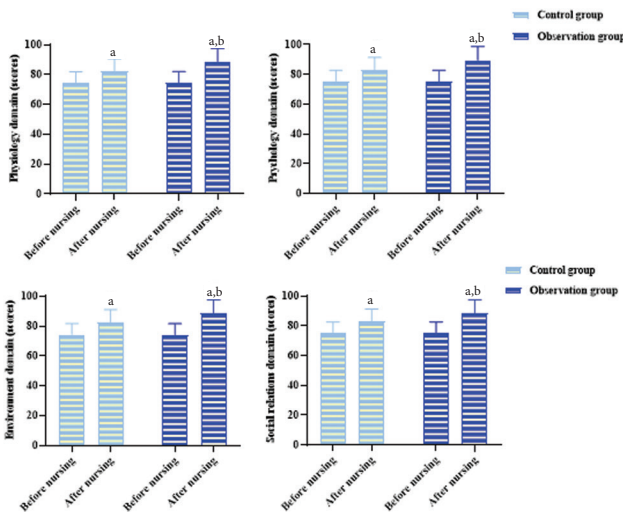


<sup>a</sup>statistically significant difference ( $P < .05$ ) when compared with scores before nursing, indicating the impact of nursing interventions on the scores within each group.

<sup>b</sup>statistically significant difference ( $P < .05$ ) when comparing the scores between the OG and CG.

Note: Figure 3 displays the Glasgow-Blatchford scores in both the Control Group (CG) and Observation Group (OG).

**Figure 4.** Comparison of Quality of Life Scores in Control and Observation Groups



<sup>a</sup>statistically significant difference ( $P < .05$ ) compared with scores before nursing, reflecting the impact of nursing interventions on enhancing the quality of life within each group.

<sup>b</sup>statistically significant difference ( $P < .05$ ) when comparing the scores between the OG and CG.

Note: Figure 4 illustrates the quality of life scores in both the Control Group (CG) and Observation Group (OG).

**Table 2.** Comparison of Nursing Satisfaction In Both Groups [n (%)]

Groups	n	Very Satisfied	Satisfied	Generally Satisfied	Disatisfied	Very Dissatisfied	Total Satisfaction Rate (%)
Control Group	40	14	15	6	4	1	29 (72.50%)
Observation Group	40	23	13	3	1	0	36 (90.00%)
$\chi^2$		4.02					
P value		<.05					

Note: Data presented as number (n) and percentage (%).  $\chi^2$ : Chi-square test for comparison between groups.  $P < .05$  was considered statistically significant. The table illustrates the distribution of nursing satisfaction levels in the control and observation groups. The Total Satisfaction Rate is calculated as the sum of “Very Satisfied” and “Satisfied” categories divided by the total number of respondents, providing an insight into the overall satisfaction of patients with nursing services in each group.

scoring system in mitigating re-bleeding risks in patients with upper gastrointestinal bleeding.

**Glasgow-Blatchford Scores in Both Groups**

Before nursing, there was no statistical difference in Glasgow-Blatchford scores between the OG and the CG ( $P > .05$ ). After nursing, the Glasgow-Blatchford score in the OG was (6.32±0.62) points, while in the CG, it was (9.14±0.92) points. Notably, both groups exhibited a decline in Glasgow-Blatchford scores after nursing, with a more pronounced reduction observed in the OG compared to the CG ( $P < .05$ ); see Figure 3. This comparative analysis underscores the efficacy of the implemented interventions in improving the Glasgow-Blatchford scores, indicative of positive outcomes in the management of upper gastrointestinal bleeding.

**Quality of Life Scores in Both Groups**

Before nursing, no statistical difference was observed in WHOQOL-BREF scores between the OG and the CG ( $P > .05$ ). After nursing, the WHOQOL-BREF scores for physiology, psychology, environment, and social relations in the OG were (88.69±8.87), (89.58±89.02), (88.67±8.85), and (88.69±8.87) points, respectively. In comparison, the CG exhibited scores of (82.39±8.24), (83.15±8.34), (82.74±8.26), and (82.97±8.29) points for the same aspects. Notably, both groups experienced an elevation in WHOQOL-BREF scores after nursing, with the OG displaying higher scores compared to the CG ( $P < .05$ ); see Figure 4. This post-nursing improvement highlights the positive impact of the applied interventions on the overall quality of life in patients with upper gastrointestinal bleeding.

**Nursing Satisfaction in Both Groups**

The overall nursing satisfaction in the OG reached 90.00%, significantly surpassing that of the CG at 72.50% ( $P < .05$ ); refer to Table 2. This marked difference underscores the positive impact of the interventions implemented, emphasizing a higher level of contentment among patients who received individualized diet nursing combined with the modified Glasgow-Blatchford scoring system in the management of upper gastrointestinal bleeding.



## DISCUSSION

In recent years, the increasing occurrence of digestive system disorders, such as peptic ulcers, acute gastric mucosal injury, and gastric cancer, has led to a notable rise in cases of UGI bleeding. This surge in UGI bleeding poses a substantial threat to the health and lives of affected individuals.<sup>17</sup> Effectively managing UGI bleeding goes beyond treating symptoms based on the disease's cause; it requires the implementation of thoughtful nursing measures. These measures play a crucial role in improving therapeutic outcomes and fostering an overall enhancement in the quality of life for patients undergoing treatment.<sup>18</sup>

Literature indicates that the leading causes of UGI bleeding encompass factors such as improper diet, heightened abdominal pressure, excessive workload, and fluctuations in mood, with improper diet being identified as the primary factor.<sup>19</sup> Prolonged consumption of spicy foods disrupts the balance between hunger and satiety, consequently disturbing the normal functioning of the human stomach. This prolonged disturbance can lead to damage to the gastric mucosal barrier, precipitating pathological changes.<sup>20</sup> Therefore, prioritizing dietary management is critically important.

Moreover, in the investigation of emergency nursing approaches for UGI bleeding, individualized diet nursing has emerged as a noteworthy focus. This innovative nursing model has gathered attention due to its potential to reduce both the hemostatic and hospitalization durations for UGI bleeding patients. The individualized diet nursing model transforms the previous passive nursing paradigm into an active approach, mitigating the inherent uncertainties in nursing tasks. It distinctly represents scientific and independent nursing practices, fostering an environment conducive to mobilizing nurses' enthusiasm. This shift aims to expedite patient recovery times and ultimately contribute to a reduction in medical costs.<sup>21</sup>

Significantly, the individualized diet nursing model, grounded in the Glasgow-Blatchford score, offers a precise assessment of rebleeding scenarios in patients with acute UGI bleeding. This model efficiently classifies patients, tailoring varying degrees of diet nursing based on severity grades. It facilitates the cautious allocation of nursing tasks, promoting the effective utilization of hospital nursing resources. Importantly, this approach aids in mitigating or preventing the occurrence of risk events and enhancing hemostasis efficiency, emphasizing its dual benefits in resource optimization and patient care.<sup>22</sup>

This study revealed that the OG exhibited shorter bleeding frequency, hemostasis time, and hospital stay in comparison to the CG. Furthermore, the OG demonstrated a lower re-bleeding rate post-nursing compared to the CG. The Glasgow-Blatchford scores were reduced in the OG relative to the CG. Additionally, the OG displayed elevated WHOQOL-BREF scores in comparison to the CG.

The overall nursing satisfaction in the OG surpassed that of the CG. These findings collectively imply the effectiveness of the individualized diet nursing model grounded in the Glasgow-Blatchford score for patients with UGI bleeding.

This efficacy may stem from the model's ability to deliver targeted and rational dietary guidance to each patient, promoting scientific and sensible eating habits. The approach utilizes various forms of continuous reinforcement to encourage active patient cooperation with treatment and nursing, ultimately contributing to a substantial reduction in UGI bleeding among patients.

Furthermore, the approach facilitates prompt cessation of bleeding, minimizing complications and avoiding reoccurrence. It not only ensures a robust foundation for the treatment and recovery of the disease but also contributes to a reduced length of hospital stay, fostering early patient recovery and effectively preventing rebleeding incidents. Our findings align with past studies which have highlighted the positive impact of diet intervention on the postoperative quality of life for breast cancer patients.<sup>23</sup>

Li et al.<sup>9</sup> highlighted the effectiveness of individualized diet nursing in enhancing the psychological cognition of patients with type 2 diabetes mellitus and hypertension. This intervention proved helpful in enhancing blood pressure and blood sugar control. Our results demonstrated reduced bleeding frequency, shorter hemostasis time, and enhanced nursing satisfaction in the observation group. These outcomes suggest that the tailored dietary approach effectively contributes to improved patient outcomes and overall care quality.

## Study Limitations

It is essential to acknowledge the limitations of this study, particularly the relatively small sample size. This constraint may impact the generalizability of the findings to a broader population. To strengthen the robustness and applicability of the conclusions, future research should consider expanding the scope and conducting additional clinical trials. This approach will enhance the statistical power of the study but also provide more comprehensive insights into the effectiveness of the individualized diet nursing model based on the Glasgow-Blatchford score in the context of upper gastrointestinal bleeding.

## CONCLUSION

In conclusion, the findings of this study underscore the positive impact of implementing an individualized diet nursing model based on the Glasgow-Blatchford score in the care of patients with upper gastrointestinal bleeding. The results, depicting reduced bleeding frequency, shorter hemostasis time, and increased nursing satisfaction in the observation group, suggest the efficacy of this tailored dietary approach. However, it is imperative to interpret these conclusions within the context of the study's limitations, particularly the small sample size. To enhance these findings and increase their generalizability, future research should consider expanding the scope and conducting additional clinical trials. However, the current study contributes valuable insights into the potential benefits of individualized diet nursing for optimizing patient outcomes in the context of UGI bleeding, which is worthy of clinical promotion.

## CONFLICTS OF INTEREST

The authors report no conflict of interest.

## FUNDING

None.

## AVAILABILITY OF DATA AND MATERIALS

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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