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Research Article

Comparing the Quality of Life of Chronic Wound Patients Utilizing Advanced Wound Dressing versus Conventional Wound Dressing

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ABSTRACT

Background: A chronic wound affects people's physical, emotional, and economic well-being. Advance wound dressing has improved wound healing and reduced costs, yet there has been no mention of patient quality of life in articles. In this study, we contrast the quality of life for chronic wound patients utilizing advanced wound dressing and conventional wound dressing.

Material and Methods: This research was prospective cohort study in the Yala Hospital from July 1, 2022 to March 31, 2023.

Results: 50 patients with chronic wounds underwent advanced wound dressing after receiving conventional wound dressing. There were 26 females (52%) and 24 males (48%) among them. Advance wound dressing outperformed conventional wound dressing in all subscale categories and overall quality of life (p = 0.00) when compared to each other. Female sex (p = 0.01), wound size 2–5 cm (p = 0.00), self-dressing (p = 0.00), and hydrocolloid dressing material (p = 0.00) were significantly linked to this improved overall quality of life in patients adopting

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advance wound dressing.

Conclusion: Advanced wound dressing materials improved the quality of life for individuals with chronic wounds compared to conventional wound dressings.

Keywords: advance wound dressing, chronic wound, quality of life

Introduction

Chronic wounds are those that have not healed in more than four weeks, do not heal normally, and require special care. Approximately 1-2% of people worldwide have unhealed wounds. The patient's physical and emotional health are negatively impacted by these disorders, which are expensive to cure.[1,2]

Patients with several co-morbidities, such as metabolic syndrome, frequently develop chronic wounds from vascular issues and neuropathies, necessitating wound care to treat and stop additional damage. Today, there disease is a serious global public health issue.[2-4]

Conventional wound dressing supplies like gauze, bandages, plasters, lint, or wadding stop the bleeding, absorb blood or other fluid, prevent irritation of the wound, and reduce the risk of infection. Advanced wound care products provide a moist environment and enhance wound healing to advance the course of treatment. Hydrogels, films, foams, hydrocolloids, hydrofiber, and alginates are some of advance wound dressing.[5]

In comparison to conventional wound dressings, advanced wound dressings offer a number of advantages. They are made to control the wound surface by soaking up exudate or holding onto moisture, which helps safeguard the wound's foundation and the tissue around it. The discomfort of patients before, during, and after dressing changes can be reduced by maintaining a good moisture balance.[6] Additionally, some advanced wound dressings have antimicrobial qualities that can aid in preventing infections and accelerating wound healing.[7]

Advance wound dressing is new in contemporary wound treatment and simpler to use with patients who have chronic wounds. Numerous earlier studies, which did not focus on quality of life, demonstrated improved cost-effectiveness of wound care and faster wound healing with advanced wound dressing when compared to conventional wound dressing.[8–14]

Numerous questionnaires were used to assess quality of life, but recent research have demonstrated that Wound-QoL-17 is a straight forward tool with good validity for use in patients with chronic wounds.[3,15-19]

The purpose of this study was to compare advanced wound dressing to conventional wound

dressing in the same patients with chronic wounds in order to assess quality of life by using Wound-QoL-17.

Material and Methods

After approved of our institutional review board. Prospective study was performed on patients with chronic wounds who had conventional wound dressings then advanced wound dressings by using QoL-wound-17 questionnaires in Yala hospital during 1 July 2022- 31 March 2023.

After using the finite population formula to compute the population, a sample size of 31 samples was needed because the incidence of chronic wounds was equal to 2% with a 95% confidence level and a 5% margin of error.[1,2] However, 50 samples will be used in this study.

The Wound-Qol-17 tool, developed in Germany and translated into English. However, questionnaires in the Thai language were translated by a Thai-English expert who works as a bioscience specialist in the United States of America and review by bilingual speaker Thai English who work in ministry of public health, Thailand. After that, we sent the text to a linguist who translated it from Thai into English backwards before the author compared the two versions and revised it as a whole. Ten chronic wound patients were then asked to test the Thai language version, and after all ten said they could read and understand everything, it was finally translated entirely into Thai. This tool consisted of easy-to-understand questionnaires for patients and staff to complete during staff interviews. This questionnaire contained 17 items that could be divided into 4 subscales, including body, psyche, daily life activity and financial subscale. Each response can result in a score, with 0 being the worst quality of life and 4 the greatest.[18] A recent study had great internal consistency (Cronbach's alpha of 0.820 to 0.933), although this study had Cronbach alpha 0.922.[20-23]

Except for patients who were unable to understand Thai or English or who refused to participate in the trial, 50 patients with chronic wounds who were using conventional wound dressing followed by advanced wound dressing were enrolled in this study. The Wound Care Clinic, Outpatient Department used demographic data forms and Wound-QoL questionaries to interview each patient. Before the interview, all patients are informed about the entire research project and given their informed consent. The staff members who conducted the interviews were unaware of the patient's wound dressing type.

There are seven different types of chronic wounds in this study:

1. Arterial ulcers: These ulcers are connected to peripheral artery disease and are brought on by arterial occlusion.

2. Venous ulcer: This ulcer forms in the presence of venous hypertension, which is typically brought on by valvular dysfunction and impairs the efficient return of venous blood during contraction of the muscle.

3. Diabetic foot ulcer: This ulcer develops in people with diabetes and is brought on by diabetic neuropathy, reduced cellular synthesis, and infection susceptibility.

4. Traumatic wound: a wound brought on by trauma

5. Burn wound: a burn injury is the source of this type of wound.

6. Pressure Wound: An injury that results from pressure, such as a bedsore

7. Infection wound is one that cannot be classified as a previous wound and has a positive wound culture.[5]

For disease-modifying bias, participants in this research who had arterial or venous ulcers were not given procedures like angioplasty, bypass surgery, or venous stripping.

All values are expressed as median, mean SD or a number (%) and statistical analyses were done by SPSS for Mac version 21, releasing 21.0.0.0 T-test, Kruskal-Wallis test or Mann-Whitney U test were used for data analysis. Statistical value with statistical significance at $p < 0.05$.

Result

This study included 50 patients with chronic wounds who received first conventional wound dressing, then advanced wound dressing. Of these, 24 men (48%) and 26 women (52%) were included. Average patient age is 55, and the majority have retired (56%), have a family income under $1,000 (64%) and have completed elementary education (50%). Patients typically had two co-morbid conditions (68%), such as diabetes mellitus (86.84%), hypertension (52.63%), chronic venous insufficiency (7.89%), and cerebrovascular accident (7.89%) as shown in Table 1.

Table 1 Demographic data

Variables	n (%)
Sex	
Male	24 (48.00)
Female	26 (52.00)
Age (years), Median (IQR)	55, (± 22)
Occupational	
Employed	14 (28.00)
Retired	28 (56.00)
Unemployed/students/housewife	8 (16.00)
Number of co-morbid	
1	13 (26.00)
2	34 (68.00)
≥ 3	3 (6.00)
Comorbidity	
DM	33 (86.84)
HTN	20 (52.63)
CVA	3 (7.89)
Autoimmune disease	1 (2.63)
CVI	3 (7.89)
Family income (per month)	
< 1000 USD	32 (64.00)
1000-3000 USD	15 (30.00)
> 3000 USD	3 (6.00)
Schooling	
Elementary School	25 (50.00)
High school	20 (40.00)
Bachelor's degree	5 (10.00)

USD: United states dollar; DM: Diabetic mellitus; CVA: Cerebrovascular accident; CVI: Chronic venous insufficiency.
Data are presented as n (%) or median (interquartile range)

The majority of patients had a single wound (82%), an infected wound (32%) and a venous ulcer (20%) at the lower limb (62%). Typically, wounds are 2 to 5 cm in size (48%) and require community-based wound care (56%) for 4-6 weeks (54%). Following the application of a standard dressing, the patient receives an advanced dressing such as hydrofiber (36%), hydrogel (20%), Foam (20%), hydrocolloid (10%), Nanocrystalline silver (10%), and negative pressure wound therapy (4%) as shown in Table 2.

Following the collection of QoL wound questionnaire data from patients with chronic wounds, it was discovered that advance wound dressing had a global score of 50 and subscale domains of body score 15.5, psyche 14 everyday life 18, and financial 4. The conventional wound dressing period had a global score of 27 and subscale domains of body score 7.5, psyche 7 everyday life 10, and financial 2. Comparing advance wound dressing to conventional wound dressing revealed that advance wound dressing had a better score across all subscale categories and the overall quality of life (P = 0.00), as shown in Table 3.

In-depth research of chronic wound patients receiving advanced wound treatment revealed that women scored higher on overall quality of life and on each subscale, such as the scale everyday life and psychological dimensions, than men did overall (p = 0.01). Pressure ulcer wounds scored well on the body subscale (p = 0.03), whereas venous, arterial, and pressure ulcer wounds performed better on

Table 2 Wound etiology

Variables	n (%)
Type of wound	
Arterial ulcer	2 (4.00)
Venous ulcer	10 (20.00)
DFU	6 (12.00)
Traumatic wound	3 (6.00)
Burn wound	5 (10.00)
Infected wound	16 (32.00)
Pressure wound	8 (16.00)
Number of wounds	
1	41 (82.00)
2	6 (12.00)
≥ 3	3 (6.00)
Wound location	
Upper extremity	7 (14.00)
Trunk	12 (24.00)
Lower extremity	31 (62.00)
Wound size	
<2 cm	1 (2.00)
2-5 cm	24 (48.00)
6-10 cm	20 (40.00)
>10 cm	5 (10.00)
Wound duration	
4-6 wks.	27 (54.00)
7-9 wks.	17 (34.00)
>9 wks.	6 (12.00)
Dressing place	
Self-dressing	10 (20.00)
Community base	28 (56.00)
Hospital base	12 (24.00)
Dressing material	
Hydrofiber	18 (36.00)
Hydrogel	10 (20.00)
Foam	10 (20.00)
Hydrocolloid	5 (10.00)
Nanocrystalline silver	5 (10.00)
NPWT	2 (4.00)

cm: centimeter, wks: weeks, NPWT: negative pressure wound therapy, Data are presented as n (%) or median. (Interquartile range)

Table 3 Wound QoL between conventional and advance wound dressing

Domains	Conventional dressing					Advance wound dressing					*P*-Value
	Median	Mean	SD	Min	Max	Median	Mean	SD	Min	Max	
Body	7.50	7.56	3.363	2	14	15.50	15.52	2.206	9	19	0.00**
Psychological	7.00	6.80	2.955	1	11	14.00	13.74	2.372	8	19	0.00**
Everyday life	10.00	9.96	3.653	1	18	18.00	17.38	3.714	3	24	0.00**
Finance	2.00	2.42	0.859	1	4	4.00	3.46	0.676	2	4	0.00**
Global	27.00	26.30	8.643	10	39	50.00	50.10	7.011	34	66	0.00**

P-value corresponds to *T*-test

Table 4 Comparison Wound QoL (advance wound dressing) and Demographic data

Variables	Body	Psychological	Everyday life	Financial	Global
Sex	*p* = 0.11	*p* = 0.01*	*p* = 0.01*	*p* = 0.91	*p* = 0.01*
Male	15.00 ± 5.00	12.50 ± 4.00	17.50 ± 6.00	4.00 ± 1.00	47.50 ± 12.00
Female	16.00 ± 2.00	15.00 ± 3.00	19.00 ± 5.00	4.00 ± 1.00	54.00 ± 10.00
Age (years)	*p* = 0.61	*p* = 0.27	*p* = 0.24	*p* = 0.20	*p* = 0.98
Median (IQR)	15.50 ± 3.00	14.00 ± 3.00	18.00 ± 5.00	4.00 ± 1.00	50.00 ± 10.00
Occupational	*p* = 0.48	*p* = 0.53	*p* = 0.26	*p* = 0.09	*p* = 0.48
Employed	16.00 ± 1.00	13.50 ± 3.00	19.00 ± 4.00	4.00 ± 1.00	51.00 ± 8.00
Retired	16.00 ± 4.00	14.50 ± 4.00	18.00 ± 6.00	3.00 ± 1.00	50.50 ± 11.00
Unemployed	14.50 ± 4.00	13.00 ± 4.00	15.00 ± 4.00	4.00 ± 0.00	45.50 ± 11.00
Comorbidity	*p* = 0.27	*p* = 0.72	*p* = 0.18	*p* = 0.86	*p* = 0.17
DM	16.00 ± 3.00	15.00 ± 4.00	18.00 ± 4.00	4.00 ± 1.00	51.00 ± 9.00
HTN	15.50 ± 5.00	13.00 ± 3.00	18.00 ± 4.00	3.50 ± 1.00	50.00 ± 12.00
CVA	17.00 ± 0.00	14.00 ± 0.00	22.00 ± 0.00	4.00 ± 0.00	57.00 ± 0.00
Autoimmune	16.00 ± 0.00	13.00 ± 0.00	21.00 ± 0.00	4.00 ± 0.00	54.00 ± 0.00
CVI	14.00 ± 0.00	12.00 ± 0.00	18.00 ± 0.00	4.00 ± 0.00	46.00 ± 0.00
Family income(month)	*p* = 0.45	*p* = 0.12	*p* = 0.29	*p* = 0.19	*p* = 0.12
< 1000USD	15.00 ± 3.00	13.00 ± 4.00	18.00 ± 5.00	3.50 ± 1.00	48.00 ± 13.00
1000-3000 USD	16.00 ± 3.00	15.00 ± 3.00	18.00 ± 3.00	4.00 ± 1.00	51.00 ± 9.00
> 3000 USD	18.00 ± 0.00	16.00 ± 0.00	18.00 ± 0.00	4.00 ± 0.00	57.00 ± 0.00
Schooling	*p* = 0.46	*p* = 0.43	*p* = 0.15	*p* = 0.37	*p* = 0.59
Elementary School	15.00 ± 2.00	15.00 ± 3.00	17.00 ± 5.00	3.00 ± 1.00	48.00 ± 9.00
High school	16.00 ± 5.00	13.50 ± 4.00	18.00 ± 6.00	4.00 ± 1.00	52.00 ± 13.00
Bachelor's degree	16.00 ± 6.00	12.00 ± 3.00	20.00 ± 6.00	4.00 ± 1.00	51.00 ± 14.00

Data are presented as n (%) or median (interquartile range)

P-value corresponds to Mann-Whitney U test or Kruskal-Wallis test

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Table 5 Comparison Wound QoL (advance wound dressing) and wound etiology

Variables	Body	Psychological	Everyday life	Financial	Global
Type of wound	*p* = 0.03*	*p* = 0.07	*p* = 0.221	*p* = 0.03*	*p* = 0.06
Arterial ulcer	14.50 ± 0.00	13.50 ± 0.00	15.50 ± 0.00	4.00 ± 0.00	47.50 ± 0.00
Venous ulcer	15.00 ± 3.00	13.00 ± 4.00	16.50 ± 4.00	4.00 ± 1.00	48.50 ± 9.00
DFU	16.00 ± 2.00	12.50 ± 3.00	19.00 ± 1.00	3.50 ± 1.00	52.50 ± 5.00
Traumatic wound	14.00 ± 0.00	11.00 ± 0.00	14.00 ± 0.00	2.00 ± 0.00	38.00 ± 0.00
Burn wound	14.00 ± 2.00	13.00 ± 3.00	16.00 ± 3.00	3.00 ± 1.00	46.00 ± 4.00
Infected wound	16.00 ± 4.00	15.00 ± 2.00	19.00 ± 6.00	3.50 ± 1.00	55.00 ± 10.00
Pressure wound	17.00 ± 3.00	14.50 ± 4.00	21.00 ± 7.00	4.00 ± 0.00	56.00 ± 11.00
Number of wounds	*p* = 0.55	*p* = 0.78	*p* = 0.49	*p* = 0.49	*p* = 0.38
1	16.00 ± 4.00	14.00 ± 4.00	18.00 ± 5.00	4.00 ± 1.00	51.00 ± 11.00
2	14.50 ± 3.00	13.00 ± 3.00	15.00 ± 5.00	3.00 ± 1.00	46.00 ± 7.00
≥ 3	15.00 ± 0.00	14.00 ± 0.00	17.00 ± 0.00	4.00 ± 0.00	51.00 ± 0.00
Wound Location	*p* = 0.13	*p* = 0.50	*p* = 0.10	*p* = 0.32	*p* = 0.17
Upper extremity	15.00 ± 2.00	14.00 ± 2.00	17.00 ± 6.00	4.00 ± 1.00	47.00 ± 11.00
Trunk	17.00 ± 3.00	14.50 ± 3.00	21.00 ± 7.00	4.00 ± 1.00	56.00 ± 12.00
Lower extremity	15.00 ± 2.00	14.00 ± 3.00	18.00 ± 5.00	3.00 ± 1.00	49.00 ± 9.00
Wound Size	*p* = 0.00**	*p* = 0.02*	*p* = 0.01*	*p* = 0.80	*p* = 0.00**
< 2 cm	17.00 ± 0.00	15.00 ± 0.00	13.00 ± 0.00	4.00 ± 0.00	39.00 ± 0.00
2-5 cm	17.00 ± 3.00	15.00 ± 3.00	19.00 ± 3.00	4.00 ± 1.00	55.00 ± 8.00
6-10 cm	15.00 ± 3.00	13.00 ± 3.00	16.00 ± 5.00	4.00 ± 1.00	47.00 ± 10.00
> 10 cm	14.00 ± 4.00	12.00 ± 5.00	14.00 ± 5.00	4.00 ± 2.00	45.00 ± 12.00
Wound duration	*p* = 0.60	*p* = 0.25	*p* = 0.11	*p* = 0.15	*p* = 0.15
4-6 wks.	16.00 ± 4.00	15.00 ±3.00	19.00 ± 5.00	4.00 ± 1.00	54.00 ± 10.00
7-9 wks.	15.00 ± 4.00	13.00 ± 3.00	15.00 ± 5.00	3.00 ± 1.00	48.00 ± 12.00
> 9 wks.	15.00 ± 2.00	13.00 ± 4.00	17.50 ± 4.00	4.00 ± 1.00	48.50 ± 9.00
Dressing place	*p* = 0.00**	*p* = 0.00**	*p* = 0.00**	*p* = 0.24	*p* = 0.00**
Self-dressing	18.00 ± 2.00	15.00 ± 3.00	20.50 ± 4.00	4.00 ± 1.00	57.00 ± 3.00
Community base	16.00 ± 1.00	14.50 ± 4.00	18.50 ± 5.00	4.00 ± 1.00	50.50 ± 7.00
Hospital base	13.50 ± 2.00	12.00 ± 4.00	14.50 ± 3.00	3.00 ± 2.00	44.00 ± 4.00
Dressing material	*p* = 0.02*	*p* = 0.12	*p* = 0.00**	*p* = 0.28	*p* = 0.00**
Hydrofiber	15.00 ± 3.00	12.50 ± 4.00	15.00 ± 6.00	3.50 ± 1.00	46.50 ± 10.00
Hydrogel	16.00 ± 3.00	15.00 ± 2.00	19.00 ± 1.00	4.00 ± 0.00	54.00 ± 8.00
Foam	17.00 ± 3.00	14.50 ± 3.00	18.00 ± 3.00	3.50 ± 1.00	52.50 ± 8.00
Hydrocolloid	17.00 ± 3.00	14.00 ± 4.00	22.00 ± 2.00	4.00 ± 1.00	57.00 ± 8.00
Acticoat	14.00 ± 5.00	13.00 ± 3.00	16.00 ± 4.00	3.00 ± 1.00	46.00 ± 11.00
NPWT	14.00 ± 0.00	12.00 ± 0.00	12.00 ± 0.00	3.00 ± 0.00	41.00 ± 0.00

Data are presented as n (%) or median (interquartile range).
P-value corresponds to Mann-Whitney U test or Kruskal-Wallis test

the financial subscale than other types of wounds (p = 0.03). In the body and psychological subscales, small wound sizes, such as those less than 2 cm and between 2 -5 cm, performed better than large wound sizes (p = 0.00 and p = 0.02, respectively). Furthermore, the everyday life subscale and overall quality of life showed high scores for wounds between 2 and 5 cm (p = 0.01 and p = 0.00, respectively). In the body, psychological, everyday life subscales and global quality of life, self-dressing had the highest score (p = 0.00). As indicated in Tables 4 and 5, the dressing material finally revealed that hydrocolloid had high scores in the body, general quality of life, and everyday life (p = 0.00, p = 0.02, and p = 0.00), while foam also had high scores as hydrocolloid in the body subscale (p = 0.02).

Discussion

One to two percent of the population experience chronic wounds, which are a global public health issue that have an impact on the physical, mental, and social well-being of patients and their families as well as the public health system and economy.[1,2]

In terms of age, the median is 55, which is comparable to a prior study[16] and lower than other prior studies.[3] This may be related to a risk factor such comorbid conditions like diabetes, hypertension, or obesity,[24] as well as a long-held belief in this area that employing traditional medical methods or herbal remedies to treat wounds causes them to become complicated and chronic at a young age. In contrast to prior research,[1] which revealed that men outnumbered women, the gender difference between the sexes was determined to be about equal at 52% to 48%. This may be attributable to variations in risk behaviors, health behaviors, environmental experiences, and psychological and physiological states.[25] Patients with chronic wounds are more likely than other patients to report having low family income and low levels of education, according to past studies; this result was also observed in the current study.[18]

In contrast to research conducted, where diabetic foot ulcer was more prevalent,[3] wound etiology showed that infected wounds (32%) and venous and pressure ulcers (20%) predominated. This may be related to the long-held belief of patients in this region, who frequently visit conventional doctors or use herbal remedies that can lead to complicated wounds such as infected. The difference in quality of life between patients with chronic wounds who received conventional wound dressing and those who received advanced wound dressing. In the era of enhanced dressing care, quality of life increased across the board. The everyday life had the highest score when it was present. According to a prior study,[18] individuals with chronic wounds had the poorest quality of life. As a result, this study demonstrated that providing patients with chronic wounds with advance wound dressing care can lessen their worst effects.

Regarding the relationship between demographic information and patient domains QoL during the advance wound dressing period. There was evidence of a substantial sex correlation. The average score, psychological domains, everyday life domains and global were higher for females. This could be caused by pain, which is one of the most stressful elements, a bad emotion, and less leisure activities available to women than to men.[26] Therefore, according to this finding, advance wound dressing could lessen discomfort and improve women's overall psychological well-being. Regarding the etiology of the wound and the patient's quality of life during the period of advance dressing wound care. On the bodily and financial subscales, it did better. This could be explained by the fact that advanced wound dressing care can lower patient costs by reducing the length of time spent on wound care, the frequency with which wound dressings are changed each week, the severity of the pain, and the likelihood of complications like infections that require surgical debridement.[9] Wound size was significantly correlated with the bodily, psychological, and daily life subscales as well as the global score. It is well recognized that the size and quantity of wounds have a significant impact on how quickly they heal, and that this correlates with the patient's quality of life.[1] This study shown that employing advanced wound care techniques, minor (2–5 cm) wounds healed quickly and patient quality of life was enhanced. Self-dressing had the highest score in the physical, psychological, daily life, and overall quality of life subscales because patients can perform functional activity at home without needing to be transported to the hospital, which can reduce costs, allow for normal employment, and improve quality of life. The dressing material ultimately showed that hydrocolloid had high scores in the body, overall quality of life, and everyday life due to its ease of use, ability to see the wound base, moderate ability to absorb exudate, lack of pain when changing it, and inability to attach to the wound base.[27] Foam also had high scores as hydrocolloid in the body subscale due to its ability to markedly absorb exudate.

The findings of this study suggest that patients with two co-morbid conditions, such as diabetes and hypertension, low family income, and low levels of education should receive priority in primary prevention of chronic wounds. After a chronic wound develops, we advise using advance wound dressing on female patients with wounds that are 2 to 5 cm in size and that they can self-dress because advanced wound dressing significantly enhance quality of life in this patient population. To prevent additional harm, deformity, and to improve the patient's quality of life, wound prevention should be given to the patient after the wound has healed.

The study's single-center design has a limitation regarding the number of participants, but multicenter research can address this issue

and enhance the sample size.

Conclusion

According to research, patients with chronic wounds who used advanced wound dressing materials had a higher quality of life than those who used conventional dressings, and factors associated with this higher overall quality of life were female sex, a smaller wound, self-dressing, and hydrocolloid dressing material.

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Conflict of interest

In this study, there is no conflict of interest.

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