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Original Article

Nephrology Section

Assessment of Resilience and Coping Strategies among Patients Undergoing Haemodialysis: A Cross-sectional Study

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ABSTRACT

Introduction: Chronic Kidney Disease (CKD) is a growing global health concern, with its prevalence increasing annually. Haemodialys (HD) is a life-sustaining medical procedure essential for patients with End Stage Renal Disease (ESRD). However, being diagnosed with CKD and undergoing HD can be psychologically distressing, requiring significant resilience and effective coping strategies from patients. Understanding resilience and adaptive coping mechanisms, as well as their inter-relationship, is crucial for developing patient-centered care models and formulating comprehensive treatment strategies that support both physical and mental well-being.

Aim: To investigate the relationship between resilience and adaptive coping strategies among CKD patients undergoing HD.

Materials and Methods: This cross-sectional study was conducted in the Dialysis unit of Yenepoya Medical College Hospital, Mangaluru, Karnataka, India, from September 2024 to January 2025. A total of 73 adult patients with CKD undergoing Maintenance HD (MHD) were included in the study. Data were collected using a validated questionnaire comprising 66 items. The primary outcome was resilience, assessed at two time points: resilience at the time of CKD diagnosis (21 items) and resilience after initiation of HD (15 items). The secondary outcomes included emotional coping (10 items), social coping (10 items), and religious/spiritual coping (10 items). The questionnaire was administered to patients who were currently undergoing HD, and responses related to the time of CKD diagnosis were recorded based on patients' recollections and memories of their initial experiences with the disease. The categorical variables were summarised using frequency and percentage. The continuous variables were summarised using mean and standard deviation. Pearson's correlation was used to find the correlation between resilience and utilisation of adaptive coping.

Results: The mean age of the subject was 48.7±12.01. The mean resilience score after diagnosing with CKD was 67.8±13.72. The score decreased after initiation of HD to 48.3±10.65. Pearson's correlation analysis revealed significant positive correlation between resilience after HD and social coping strategies (r=0.345, p=0.003); emotional coping and social coping (r=0.678).

Conclusion: The result of the study shows a positive relationship between resilience and the utilisation of adaptive coping strategies.

Keywords: Chronic illness adaptation, Coping mechanisms, Maintenance haemodialysis, Psychological adjustment, Psychological resilience

INTRODUCTION

The CKD is a growing global health concern, with the incidence of ESRD rising annually [1]. It is estimated that the number of ESRD patients worldwide might increase by almost 30% by 2050 [2]. The progressive loss of kidney function ultimately results in the need for Renal Replacement Therapy (RRT), which includes options such as HD, Peritoneal Dialysis (PD), or kidney transplantation [2].

Understanding both the medical and psychological dimensions of CKD is essential for delivering truly comprehensive care [3]. At such times, resilience factors become crucial, including psychological strength, emotional support, spiritual stability, and a sense of purpose to help them cope and hold on through the challenges ahead [4].

Resilience is the process and outcome of successfully coping with challenging or difficult situations in life, particularly through mental, emotional, and behavioural flexibility to adjust to external and internal challenges [5]. Studies have found that HD patients experiencing various stresses can defend themselves by having a high degree of resilience, acting as a vital tool of self-defence [2]. Besides, psychologically resilient individuals can easily manage difficult situations and enhance the Quality of Life (QoL) [6]. Understanding the resilience and adaptive coping strategies employed by these individuals is crucial for developing patient-centered care models that address not only physical health but also mental well-being [7].

Thus, the present study aimed to investigate the relationship between resilience and adaptive coping strategies among CKD patients undergoing HD. The objectives included examining how resilience correlates with various coping mechanisms such as emotional, social, and religious/spiritual coping employed by these patients.

MATERIALS AND METHODS

This cross-sectional study was conducted in the Dialysis unit of Yenepoya Medical College Hospital, Mangaluru, Karnataka, India, from September 2024 to January 2025. The study was approved by the Institutional Ethics Committee at Yenepoya Medical College Hospital (YEC2/2024/159). Written informed consent was obtained from all enrolled patients.

Inclusion and Exclusion criteria: Adults aged 18 years and above receiving MHD were recruited for the study using simple random sampling. Inclusion criteria comprised patients diagnosed with CKD who had initiated MHD and were undergoing maintenance dialysis sessions at the time of data collection. Outpatient MHD patients with hepatitis B and hepatitis C and patients with cognitive impairment were excluded from the study.

Study Procedure

A self-structured questionnaire was used to collect information on the assessment of resilience and coping strategies among

patients undergoing HD. The validation of the questionnaire was done by three experts: a nephrologist, an ethicist, and a clinical psychologist.

The internal consistency reliability of the study instruments was evaluated using Cronbach's alpha coefficient. Reliability analysis was performed separately for each subscale. A Cronbach's alpha value of ≥0.70 was considered indicative of acceptable internal consistency. The resilience scale after initial diagnosis of CKD demonstrated good internal consistency (α=0.86). Similarly, the resilience scale after undergoing HD showed good reliability (α=0.83). Among the coping domains, emotional coping exhibited acceptable internal consistency (α=0.72), while social coping demonstrated acceptable to good reliability (α=0.76). The religious/spiritual coping subscale showed excellent internal consistency (α=0.93) overall all the subscales met the recommended reliability threshold (α ≥0.70) and were considered suitable for subsequent statistical analysis.

The primary outcome was resilience, assessed at two time points: resilience at the time of CKD diagnosis (21 items) and resilience after initiation of HD (15 items). The secondary outcomes included emotional coping (10 items), social coping (10 items), and religious/spiritual coping (10 items). The questionnaire was administered to patients who were currently undergoing HD, and responses related to the time of CKD diagnosis were recorded based on patients' recollections and memories of their initial experiences with the disease.

Each item was scored on a Likert scale, with higher scores indicating greater resilience or better coping ability. Domain-wise scores were calculated by summing the responses to items within each respective domain. The total scores for each domain were used for analysis, with higher scores reflecting higher levels of resilience or coping.

STATISTICAL ANALYSIS

The data were analysed using Statistical Package for Social Sciences (SPSS) version 27.0. Categorical variables were summarised using frequency and percentage, while continuous variables were expressed as mean and standard deviation. Pearson's correlation analysis was employed to determine the relationship between resilience and the utilisation of adaptive coping strategies.

RESULTS

A total of 73 participants enrolled in the study. Participants aged between 19-76 years of age, with a mean age of 48.7±12.01 [Table/Fig-1].

Variables	Category	n (%)
Gender	Female	16 (21.9)
	Male	57 (78.1)
Family status	Nuclear family	54 (74.0)
	Joint family	19 (26.0)
Occupation	Unemployed	61 (83.6)
	Employed	12 (16.4)
Financial status	Below Povert Line (BPL)	59 (80.8)
	Above Poverty Line (APL)	14 (19.2)
Education	Lower Primary (LP)	8 (11.0)
	Upper Primary (UP)	22 (30.1)
	Higher School (HS)	22 (30.1)
	Pre University Course	6 (8.2)
	Graduate	8 (11.0)
	No Education (NIL)	7 (9.6)
Vascular access site	CVC	12 (17.80)
	AVF	61 (82.20)
HD session /week	2	15 (20.5)
	3	58 (79.5)
HD Vintage: Years on dialysis	1	23 (31.5)
	2	9 (12.3)
	3	15 (20.5)
	4	7 (9.6)
	5	8 (11.0)
	6	3 (4.1)
	7	4 (5.5)
	8	1 (1.4)
	9	1 (1.4)
	10	1 (1.4)
	11	1 (1.4)

[Table/Fig-1]: Descriptive statistics of study participants.

The mean resilience score after CKD diagnosis was 67.8. After HD begins, the mean drops to 48.3, showing reduced and more consistent resilience [Table/Fig-2].

Variables	Mean	Median	SD
Age (in years)	48.7	49	12.01
Resilience after initial diagnosis of CKD	67.8	68	13.72
Resilience after undergoing HD	48.3	51	10.65
Emotional coping	36.8	37	6.18
Social coping	38.1	38	6.55
Religious/Spiritual coping	40.7	41	7.18

[Table/Fig-2]: Descriptive statistics for the continuous variables (N=73).

Individuals who were resilient after initial diagnosis also tend to be resilient after undergoing HD (r=0.608). Religious/spiritual coping shows moderate connections with all, especially emotional and social coping, suggesting it supports other coping strategies [Table/Fig-3].

Overall, most CKD patients experienced marked emotional distress immediately after diagnosis [Table/Fig-4]. During HD, a large proportion continued to report substantial emotional distress [Table/Fig-5]. Despite this, most patients adopted positive emotional coping strategies, such as communicating with partners, friends, and healthcare providers [Table/Fig-6].

In addition, social coping mechanisms played a crucial role, with family support, time spent with friends, interaction with fellow patients, and communication with healthcare professionals fostering relaxation, motivation, social connectedness, and a sense of normalcy [Table/Fig-7].

Furthermore, religious and spiritual coping emerged as a major source of support, with faith, prayer, and spiritual communities providing comfort, hope, optimism, emotional calmness, and reduced worry throughout the dialysis journey [Table/Fig-8].

DISCUSSION

The present study aimed to investigate the relationship between resilience and adaptive coping strategies among CKD patients undergoing HD. In the present study, participants showed higher resilience after being first diagnosed with CKD compared to after starting HD. This drop suggests that the process of undergoing HD might be emotionally and physically challenging, which could reduce a person's ability to cope or "bounce back". It highlights the importance of offering more support to patients during and after they begin HD treatment.

In terms of coping strategies, participants seemed to rely most on religious or spiritual coping, followed by social coping and emotional coping. Emotional coping was used slightly less, which could mean that people might struggle to manage their emotions or may need

Correlation matrix		Resilience after initial diagnosis of CKD	Resilience after undergoing HD	Emotional coping	Social coping	Religious /Spiritual coping
Resilience after initial diagnosis of CKD	Pearson's r	—				
	p-value	—				
Resilience after undergoing HD	Pearson's r	0.608	—			
	p-value	<.001	—			
Emotional coping	Pearson's r	0.477	0.516	—		
	p-value	<.001	<.001	—		
Social coping	Pearson's r	0.426	0.345	0.678	—	
	p-value	<.001	0.003	<.001	—	
Religious/Spiritual coping	Pearson's r	0.263	0.242	0.566	0.621	—
	p-value	0.024	0.039	<.001	<.001	—

[Table/Fig-3]: Correlation between utilisation of adaptive coping strategies and resilience.

Resilience after initial diagnosis of CKD	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
I was shocked when I was diagnosed with Chronic Kidney Disease (CKD)	3 (4.1)	12 (16.4)	6 (8.2)	27 (37)	25 (34.2)
I bargained with the doctor, saying there was an issue with my report or the lab in general	4 (5.5)	25 (34.2)	13 (17.8)	28 (38.4)	3 (4.1)
I felt like not to continue living with this condition when I was diagnosed with this condition	9 (12.3)	24 (32.9)	6 (8.2)	23 (31.5)	11 (15.1)
I was very angry towards everyone during the initial time	4 (5.5)	27 (37)	6 (8.2)	21 (28.8)	15 (20.5)
After initial diagnosis of CKD, even my family members were afraid to speak to me	11 (15.1)	32 (43.8)	3 (4.1)	11 (15.1)	16 (21.9)
I was non adherence to treatment initially	9 (12.3)	15 (20.5)	6 (8.2)	28 (38.4)	15 (20.5)
I kept isolated during the initial time because I didn't want to meet people	9 (12.3)	23 (31.5)	8 (11)	20 (27.4)	13 (17.8)
I didn't like those days when people addressed me like a patient	3 (4.1)	20 (27.4)	11 (15.1)	24 (32.9)	15 (20.6)
I have to step down from my role as a family head	10 (13.7)	26 (35.6)	11 (15.1)	21 (28.8)	5 (6.8)
I felt those days, I was a dependable person	5 (6.8)	24 (32.9)	7 (9.6)	31 (42.5)	6 (8.2)
Nobody understood my emotional needs during those days	12 (16.4)	31 (42.5)	8 (11)	16 (21.9)	6 (8.2)
Nobody was listening to my decision and people around me were making decisions for me	9 (12.3)	21 (28.8)	9 (12.3)	23 (31.5)	11 (15.1)
I refused to go to any family functions during the initial time	11 (15.1)	19 (26)	6 (8.2)	24 (32.9)	13 (17.8)
I was not ready to accept the restriction on my diet and fluid intake and even got frustrated	7 (9.6)	12 (16.4)	12 (16.4)	24 (32.9)	18 (24.7)
I didn't like the frequent visits to hospitals for consultations and different test	4 (5.5)	18 (24.7)	10 (13.7)	24 (32.9)	17 (23.3)
I do feel very anxious each time I visit the hospital	7 (9.6)	19 (26)	5 (6.8)	26 (35.6)	16 (21.9)
I was functionally limited from my work, from going out, etc.,	5 (6.8)	15 (20.5)	7 (9.6)	28 (38.4)	18 (24.7)
My family has to spend a lot of money, therefore I felt like a burden to them	4 (5.5)	13 (17.8)	4 (5.5)	34 (46.6)	18 (24.7)
After the diagnosis, I was unable to work and lost my job	8 (11)	17 (23.3)	6 (8.2)	24 (32.9)	18 (24.7)
I hated and became angry when I had to take medicine	7 (9.6)	28 (38.4)	2 (2.7)	20 (27.4)	16 (21.9)
I believed that I was going to die soon, and I was terrified about the future of my life	4 (5.5)	22 (30.1)	11 (15.1)	22 (30.1)	14 (19.2)

[Table/Fig-4]: Assessment of resilience after initial diagnosis of CKD.

Resilience after undergoing HD	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
I was devastated to learn that I would need to have HD	2 (2.7)	15 (20.5)	3 (4.1)	32 (43.8)	21 (28.8)
Because I had a catheter in me, my cosmetic effect was troubling me when I went out	1 (1.4)	19 (26)	6 (8.2)	25 (34.2)	22 (30.1)
I was hoping that my kidney and general health would return to normal after some HD sessions	4 (5.5)	8 (11)	8 (11)	34 (46.6)	19 (26)
The sight of this HD machine and its noises irritated me	8 (11)	29 (39.7)	3 (4.1)	16 (21.9)	17 (23.3)
The time I spent on the HD machine was very scary during those days	6 (8.2)	24 (32.9)	7 (9.6)	20 (27.4)	16 (21.9)
I was quite depressed since every time I went to the session, the same therapies were given and nothing changed	6 (8.2)	28 (38.4)	17 (23.3)	17 (23.3)	5 (6.8)
I could see many patients with the same issues undergoing HD which was again a depressive sight	3 (4.1)	23 (31.5)	9 (12.3)	25 (34.2)	13 (17.8)
I avoided talking to the HD staff and the family members during those days	10 (13.7)	22 (30.1)	7 (9.6)	17 (23.3)	17 (23.3)
I thought something horrible was going to happen when the HD machine started to sound the alarms	13 (17.8)	31 (42.5)	4 (5.5)	12 (16.4)	13 (17.8)
I purposefully tried to skip the HD treatment myself but was unable to do it	16 (21.9)	18 (24.7)	5 (6.8)	18 (24.7)	16 (21.9)
As the HD treatment days went by, I started to feel down	7 (9.6)	24 (32.9)	8 (11)	24 (32.9)	10 (13.7)
I purposefully tried to skip HD session, but was unable to do it	11 (15.1)	24 (32.9)	9 (12.3)	24 (32.9)	5 (6.8)

It is like a nightmare, a day before the dialysis session	8 (11)	22 (30.1)	7 (9.6)	18 (24.7)	18 (24.7)
I constantly become worried and can't sleep at night thinking about the pain of the needles	8 (11)	18 (24.7)	8 (11)	21 (28.8)	18 (24.7)
During the initial period of my HD treatments, I was generally quite depressed	5 (6.8)	15 (20.5)	9 (12.3)	34 (46.6)	10 (13.7)

[Table/Fig-5]: Assessment of resilience after undergoing HD.

Emotional coping	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
I was emotionally unstable and finally, I adapted to it	3 (4.1)	10 (13.7)	7 (9.6)	26 (35.6)	27 (37)
I used to cry a lot and sometimes I used to feel better	6 (8.2)	15 (20.5)	12 (16.4)	26 (35.6)	14 (19.2)
I used to feel comfortable if I stay alone for sometimes and feel my pain	7 (9.6)	13 (17.8)	11 (15.1)	20 (27.4)	22 (30.1)
I feel comfortable discussing with my partner/friend	3 (4.1)	3 (4.1)	6 (8.2)	31 (42.5)	30 (41.1)
When I express my anger or other feelings to someone, I feel so free	5 (6.8)	24 (32.9)	13 (17.8)	20 (27.4)	11 (15.1)
When I watch a movie and divert my attention, I feel at relaxed	3 (4.1)	15 (20.5)	9 (12.3)	26 (35.6)	20 (27.4)
Hearing the encouraging, inspirational speech calms me down	4 (5.5)	11 (15.1)	11 (15.1)	31 (42.5)	16 (21.9)
I find solace in comparing my situation to that of those who suffer more than I do	1 (1.4)	4 (5.5)	4 (5.5)	44 (60.3)	20 (27.4)
To relieve stress, I used to go for a drive or go for a talk	3 (4.1)	15 (20.5)	3 (4.1)	34 (46.6)	18 (24.7)
Sharing my problems with the healthcare team makes me feel more relaxed	5 (6.8)	6 (8.2)	3 (4.1)	38 (52.1)	21 (28.8)

[Table/Fig-6]: Assessment of emotional coping.

Social coping	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
The support I got from the family made me feel relaxed	4 (5.5)	6 (8.2)	3 (4.1)	26 (35.6)	34 (46.6)
I used to get special attention in the social group and they used to cheer me up	3 (4.1)	13 (17.8)	6 (8.2)	28 (38.4)	23 (31.5)
I actively participate in support groups or engage in conversations with other HD patients for social support	4 (5.5)	9 (12.3)	8 (11)	33 (45.2)	19 (26)
I used to console/motivate other patients/ people who were depressive or not well with my condition	5 (6.8)	6 (8.2)	6 (8.2)	36 (49.3)	20 (27.4)
I feel more comfortable spending time with family and friends than being alone and this time I forget about my issues	5 (6.8)	2 (2.7)	1 (1.4)	33 (45.2)	32 (43.8)
Social coping helps to maintain a sense of normalcy and social connection despite the demands of HD	8 (11)	5 (6.8)	12 (16.4)	30 (41.1)	18 (24.7)
My spouse/parents/children/friends used to spend more time with me than they do now because of this disease	3 (4.1)	4 (5.5)	7 (9.6)	34 (46.6)	25 (34.2)
I used to call the physician, psychologist, or other healthcare professional whenever I was feeling low so that I could unwind there	3 (4.1)	9 (12.3)	6 (8.2)	31 (42.5)	24 (32.9)
I started working after I was diagnosed with the CKD where I could talk to people and spend time	16 (21.9)	15 (20.5)	9 (12.3)	22 (30.1)	11 (15.1)
Even when I'm receiving dialysis, I enjoy conversing with others and sharing the things that are happening in my life	2 (2.7)	6 (8.2)	6 (8.2)	34 (46.6)	25 (34.2)

[Table/Fig-7]: Assessment of social coping.

Religious/spiritual coping	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
My religious or spiritual faith plays a role in helping me cope with the challenges of HD	2 (2.7)	4 (5.5)	5 (6.8)	31 (42.5)	31 (42.5)
I always engage in religious or spiritual practices whenever I have free time	3 (4.1)	4 (5.5)	2 (2.7)	42 (57.5)	22 (30.1)
My religious or spiritual community provides support or comfort during HD	2 (2.7)	6 (8.2)	5 (6.8)	35 (47.9)	25 (34.2)
My religious or spiritual beliefs gave me hope and optimism in life with HD	2 (2.7)	3 (4.1)	5 (6.8)	38 (52.1)	25 (34.2)
I used to pray and spend time with God whenever I felt down, and it was calming	2 (2.7)	2 (2.7)	4 (5.5)	41 (56.2)	24 (32.9)
I feel comfortable discussing my religious or spiritual beliefs with my healthcare team	4 (5.5)	6 (8.2)	12 (16.4)	31 (42.5)	20 (27.4)
I firmly believe that when I pray, God provides me with comfort throughout my dialysis treatments	1 (1.4)	2 (2.7)	7 (9.6)	33 (45.2)	30 (41.1)
I always stay in touch with those who share my spiritual values	1 (1.4)	7 (9.6)	8 (11)	37 (50.7)	20 (27.4)
I enjoy spending time with others, discussing God with them, and offering consolation even when I find it myself	1 (1.4)	4 (5.5)	9 (12.3)	38 (52.1)	21 (28.8)
I don't worry about my life or health because God is in charge of both	1 (1.4)	2 (2.7)	3 (4.1)	35 (47.9)	32 (43.8)

[Table/Fig-8]: Assessment of religious/spiritual coping.

more help developing healthy emotional coping strategies. Some study indicates that religious and spiritual coping mechanisms are commonly employed by CKD patients undergoing HD [8]. A study explored that emotional regulation, social support, and spiritual beliefs are some of the coping styles used by HD individuals to cope with stress [9].

A strong positive correlation was found between 'resilience after the initial diagnosis of CKD and resilience after undergoing HD ($r=0.608$, $p<0.001$), suggesting that individuals who exhibit resilience early in their diagnosis tend to maintain or further develop resilience as their treatment progresses. This finding underscores the importance of

early psychological support and resilience-building interventions at the time of diagnosis. A study finding stated that there is a significant relationship between psychological resilience and social support and family resilience. As psychological distress is common in MHD patients, high psychological resilience is vital in order to promote psychological well-being [6].

Regarding coping mechanisms, emotional coping showed a moderate to strong positive correlation with both resilience after the initial diagnosis ($r=0.477$, $p<0.001$) and resilience after undergoing HD ($r=0.516$, $p<0.001$). Emotional coping appears to be a key component in building and sustaining resilience in this population. The use of emotion-focused coping was associated with a reduced risk of depressive disorder [10].

Similarly, social coping strategies demonstrated a moderate correlation with resilience after initial diagnosis ($r=0.426$, $p<0.001$) and a weaker yet significant correlation with resilience after undergoing HD ($r=0.345$, $p=0.003$). This finding is supported by previous studies that demonstrated a significant association between resilience and social support among HD patients. Mohanram KM and Shaji JH (2025) reported a moderately negative correlation between stress and resilience in HD patients ($r=–0.37$, $p<0.01$), indicating that higher stress was associated with lower resilience in this population [11], while Işık Ulusoy S and Kal Ö (2020) highlighted that coping strategies and psychological factors significantly influence patients' QoL in HD settings, showing that adaptive coping is associated with better QoL and reduced psychological distress [10]. Similarly, Similarly, Kisomi ZS et al., (2024) found that social support significantly moderated the relationship between death anxiety and resilience among dialysis patients, indicating that greater social support was associated with higher resilience and attenuated the negative impact of death anxiety on resilience [12].

Furthermore, the intercorrelations among the coping strategies themselves are often interrelated and may act synergistically. A study suggested that religious practices could facilitate the use of cognitive reappraisal by promoting reframing of negative cognitions to alter emotional states (emotional coping) [13]. A study found out that high perceived social support alongside high religiosity had a significant effect on patients' life satisfaction domain of health related QoL and outlined the importance of social support and religiosity assessment in HD patient care [14]. This suggests that a multifaceted coping profile, involving emotional coping, social coping, and religious/spiritual coping, may be more effective in promoting resilience than reliance on a single strategy.

Limitation(s)

The sample size was relatively small and recruited from a single tertiary care centre in Mangaluru, which may limit the generalisability of results to other populations or regions. Self-reported data through questionnaires may cause bias (social desirability bias, recall bias) potentially influencing accuracy.

CONCLUSION(S)

The findings of the present study highlight the vital role of adaptive coping, particularly emotional, social, and religious/spiritual coping, in supporting resilience among individuals undergoing HD. Longitudinal studies with larger, more diverse samples are recommended to confirm and expand upon these findings.

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