

Article

Associations among Spirituality, Health-Related Quality of Life, and Depression in Pre-Dialysis Chronic Kidney Disease Patients: An Exploratory Analysis in Thai Buddhist Patients

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Abstract: There are numerous studies of quality of life (QOL) in chronic kidney disease (CKD) patients; however, there are a few studies of spirituality and its association with QOL. Previous studies were done focusing on Western cultures; thus, the study of CKD patients in Eastern cultures would reveal interesting insights. This study was conducted to explore the spirituality, QOL, and depression of Thai CKD patients, and the associations between spirituality, QOL, and depression. This cross-sectional descriptive study using structured questionnaires was approved by the Khon Kaen University Ethics Committee in Human Research, Thailand. A total of 63 pre-dialysis CKD stage V patients who visited the kidney diseases clinic as appointed at the outpatient department in a community hospital in northeastern Thailand were recruited. The patients were asked for consent and then interviewed. Spirituality was assessed by using the WHOQOL Spirituality, Religiousness and Personal Beliefs (WHOQOL-SRPB) and the Functional Assessment of

Chronic Illness Therapy-Spiritual Well-Being Scale (FACIT-Sp). The 9-item Thai Health Status Assessment Instrument (9-THAI) was used to assess QOL. The Beck Depression Inventory-II (BDI-II) was used to evaluate the depression. The study patients had high WHOQOL-SRPB and FACIT-Sp spirituality scores (median = 18.0, and 44.0, respectively). The 9-THAI QOL scores were within the normal range of the Thai general, healthy population (physical health score [PHS]; median = 48.0, mental health score [MHS]; median = 32.0). Based on BDI-II scores, most patients were in the minimal depression group (63.5%). The Spearman rho correlation coefficients (r_s) of PHS and WHOQOL-SRPB and FACIT-Sp were moderate with 0.34 for both spirituality measures. Similarly, also the mental health scores (MHS) correlated moderately with WHOQOL-SRPB ($r_s = 0.46$) and FACIT-Sp ($r_s = 0.37$). Depressive symptoms (BDI-II) strongly negatively correlated with WHOQOL-SRPB ($r_s = -0.58$) and FACIT-Sp ($r_s = -0.55$). Overall results were consistent with previous studies in Western contexts. Understanding spirituality would lead to the better management of depression and improving patient survival. These significant associations suggest that further research is needed on how provider knowledge of patient spirituality could affect the outcomes for patients both in terms of depression and patient survival.

Keywords: spirituality; quality of life; depression; chronic kidney disease

1. Introduction

Chronic kidney disease (CKD) is a significant chronic disease as it leads to patient morbidity and mortality [1]. Based on the third National Health Examination Survey (NHES III), a national representative survey of the Thai population, the prevalence of age-adjusted CKD stage III-V in the year 2004 was 8.9%, and the prevalence of CKD stage V was 0.2% [2]. The report also showed the highest prevalence of CKD in the northeastern region of Thailand (10.8%). Thus, CKD is a chronic disease of concern for hospitals in the northeastern region of Thailand.

Advanced medical technologies prolong patient lives, thus healthcare outcomes have become broader than patient survival. According to the definition of “*health*”, as physical, mental, and social well-being, stated by the World Health Organization (WHO) [3], quality of life (QOL) has become an important outcome of healthcare services. The specific term, health-related quality of life (HRQOL), has been recommended as a frame of reference for QOL in healthcare research [4,5]. Based on recommendations resulting from a focus group of lay people of 18 participating countries, including Thailand, a spirituality domain was included as a part of the QOL measure developed by WHO (WHOQOL) [6]. Both QOL and spirituality are ill-defined terms, thus consensus on their definitions still has not been reached [5,7,8]. The definition of spirituality is also a debatable issue [9,10], and both QOL and spirituality definitions vary according to the frameworks defined by the measures’ developers [4,9,10]. Numerous QOL questionnaires have been developed to measure QOL [11], and considerable numbers of spirituality measures have been developed [12]. However, experts seemingly

agree that HRQOL should be composed of physical, mental, and social well-being components [4,5], while spirituality should address meaning, purpose, and hope [13].

The burdens imposed by the multiple symptoms of CKD from disease and treatment experienced by patients are well recognized [14]. Patient function limitations and QOL declination with disease progression are also well known [15,16]. Apart from QOL deterioration, depression is common in CKD as well, since a recent meta-analysis study reported the prevalence of depression in CKD ranged from 21.4%–39.3% varying by stages of disease and assessment methods [17]. Both QOL and depression significantly predicted morbidity and mortality in CKD patients [18–23]. There are numerous studies of QOL in CKD patients; however, spirituality studies in this patient group are limited [24,25]. Studies on the relationship of QOL, depression and spirituality in CKD patients [25–27] reported a positive relationship between QOL and spirituality/religiosity, while the relationship between depression and spirituality/religiosity was negative. Spirituality and beliefs are important elements for helping patients cope with their illness [28,29], thus understanding spirituality and its relationship with QOL and depression might lead to better care in this patient group.

There has been some research on QOL measures in Thai CKD patients [30–34], and most of the measures were developed in Western countries except for a measure called the 9-item Thai Health status Assessment Instrument (9-THAI) [33,34]. The 9-THAI was developed to be a culturally specific health status (or so-called HRQOL) measure for the Thai population. It was thoroughly psychometrically examined, and results showed that it is a valid, reliable and responsive measure in both the Thai general population and end stage renal disease patients [33,34]. Since the validity property of measures should clearly link with score interpretation as suggested by theory [35], the norm-based scoring system of the 9-THAI is considered to be a major advantage [34]. The norm-based scores of 9-THAI are the standardized T scores that are calculated by using the averages and standard deviations (SDs) of the general healthy Thai population data of the National Health and Welfare Survey Year 2003, and thus the scores provide meaningful interpretation by comparison with the general healthy Thai population. Apart from QOL research, there is limited amount of research that is concerned with depression or spirituality in Thai renal disease patients. One study reported a 6.7% prevalence of depression in Thai dialysis patients [36], and a qualitative research reported that spiritual experience was valuable in Thai CKD patients [37]. In addition, the authors recently reported that spiritual well-being, as measured by FACIT-Sp, of pre-dialysis CKD and chronic hemodialysis patients was not significantly different between the two groups [38].

The association of QOL, spirituality, and depression has been previously studied in Western culture [25–27]. The concept of spirituality varied according to different societies, cultures, beliefs, philosophies of living, and particular religions [39]. Most Thai people are Buddhists, and the way of life and spirituality has been influenced by Buddhist doctrine and Buddha's teachings. Spirituality in a Thai context has also been influenced by Brahmanism and other supernatural beliefs such as ghosts, spirits, magical amulets, and magical incantations, *etc.* Since the study of QOL, spirituality, and depression associations in Thai CKD patients is still limited, this study was conducted to examine the associations.

2. Methods

2.1. Materials and Methods

The present study was a cross-sectional descriptive study using structured questionnaires. The protocol of study was approved by the Khon Kaen University Ethics Committee for Human Research, Thailand. Eligible patients were recruited between 1 July 2013 and 30 September 2013. Inclusion criteria for pre-dialysis CKD were patients with a glomerular filtration rate less than 15 mL/min/1.73 m² for three months or longer who visited the kidney diseases clinic, outpatient department, in a community hospital located in northeastern Thailand. A trained interviewer invited all eligible patients to participate in the study, and written informed consents were obtained prior to data collection. Patients were excluded if they were unable to communicate such as unconsciousness, confusion, speaking or hearing loss. Patients who refused to participate in the study were also excluded. Since people in northeastern Thailand are classified in the low socioeconomic group, most CKD patients in this hospital had the limitation of literacy, and the interview mode of questionnaire administration was considered to be the most appropriate method. Each patient was interviewed in a private area of the kidney diseases clinic during a regular visit to the clinic as appointed during the study time frame. To prevent bias from interviews, the trained interviewer only read questions and response choices without interpretation. The interviewer then carefully recorded the answer according to patients' responses to each question. Interview sessions lasted approximately one hour.

2.2. Measurement

The questionnaires used in this study were the World Health Organization Quality of Life-Spirituality, Religiousness and Personal Beliefs (WHOQOL-SRPB) [40], the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale (FACIT-Sp) [41], the Beck Depression Inventory-II (BDI-II) [42], and the 9-THAI [34]. The spirituality was measured by using the WHOQOL-SRPB and the FACIT-Sp. The validation study of WHOQOL-SRPB was based on the largest and most diverse population [12], and Thailand was one of the 18 study countries [40]. The FACIT-Sp was validated in the largest patient sample [12]. The HRQOL was measured by the 9-THAI as previously explained, with meaningful score interpretation based on the norm-based scoring system [34]. The depression was measured by BDI-II, since BDI-II is commonly applied in research on CKD patients [24]. The Thai versions of these four questionnaires were available.

The WHOQOL-SRPB is composed of 32 questions that are divided into eight facets: spiritual connection, meaning and purpose in life, experiences of awe and wonder, wholeness and integration, spiritual strength, inner peace, hope and optimism and faith. Scores were coded and calculated as indicated in the manual [43]. Scores range from 0–20 with higher scores indicating greater spiritual well-being. The authors have previously reported the psychometric properties of WHOQOL-SRPB Thai version based on these study CKD patients [44]. The WHOQOL-SRPB Thai version was valid and reliable. The convergent validity was assessed by using FACIT-Sp and Spearman Rho correlation of total scores of WHOQOL-SRPB and FACIT-Sp was 0.73. A high value of Cronbach's alpha (0.94; 95% CI 0.91–0.96) of the overall WHOQOL-SRPB 32 items indicated a high reliability.

The FACIT-Sp (Version 4) Thai Version consists of 12 items that are divided into three subscales: meaning, peace, and faith. Scores were coded and calculated according to the manual [42] with higher scores indicating higher spiritual well-being. The FACIT-Sp total scores range from 0–48, and the three subscales scores range from 0–16. The FACIT-Sp is a reliable and valid measure. The Cronbach's alpha of the FACIT-Sp was in range of 0.81–0.88. The validity of FACIT-Sp was examined by using concurrent spirituality measures, and moderate to strong correlation was found [41]. The Thai version of FACIT-Sp was translated and validated by Dr. Supalak Khemthong (with permission from Jason Bredle). The preliminary results indicated good validity and reliability (Cronbach's alpha = 0.80) [45].

The 9-THAI [33,34] was used to evaluate QOL. The 9-THAI is composed of seven domains and two global health ratings. The seven domains enable subjects to rate their experience with health problems during the last month. It includes four domains (mobility, self-care, usual activities, illness/discomfort) that measure physical constructs, and three domains (anxiety/depressed, cognition, social functions) that measure mental constructs. The scores of all items are coded such that higher scores reflect better health status. The 9-THAI was transformed into two scale scores, physical and mental health scores (PHS, MHS). The PHS and MHS are the standardized T scores that are based on the averages and SDs of gender (male, female) and age-groups (15–19, 20–29, 30–39, 40–49, 50–59, ≥ 60 years) of the Thai general healthy population. Based on the National Health and Welfare Survey Year 2003 of Thailand, data of Thai general healthy population (defined as self-reported with no any chronic diseases, no history of illness during the past month, and no history of hospitalization during the past year) were used to calculate the averages and SDs. To comprehensibly interpret the scores based on the normal distribution, the score range of 20 to 80 (± 3 SDs) indicate the possible distribution of Thai general healthy population scores. If 9-THAI PHS or MHS of patients are above 20, they are justified to be equal to the Thai general healthy population. The 9-THAI is a valid and reliable QOL measure in Thai renal replacement therapy patients. In brief, the validity was shown in terms of convergent and divergent validity using SF-36 as a concurrent measure, and the concurrent validity was also assessed by using clinical variables as concurrent measures. The test-retest reliability of 9-THAI was satisfactory as the intraclass correlation coefficients were 0.78 (mental) and 0.79 (physical).

The Beck Depression Inventory-II (BDI-II) Thai Version was used to evaluate the severity of depression. The BDI-II contains of 21 questions, and scores were coded and calculated as indicated in the manual [42]. Scores range from 0–63 and higher total scores indicate more severe depression. Scores were also used to classify patients into groups as follows: 0–13 = minimal, 14–19 = mild, 20–28 = moderate, 29–63 = severe depression.

2.3. Statistics

Descriptive statistics were used to analyze the demographic variables. Due to skewed distributions of scores, Spearman Rho correlation was applied for assessing correlation of spirituality, QOL, and depression. Analyses were done using IBM SPSS v 19.0, and the significance level was set at 0.05.

3. Results

The 63 study patients were all eligible CKD stage V patients who registered in the hospital's CKD clinic during the study period. Since the study hospital is a small 30-bed hospital that is responsible for healthcare services of 20,394 people in the area, these 63 patients constituted all CKD stage V patients in the area, indicating a 0.3% prevalence of CKD stage V, a little greater than the 0.2% prevalence given in the national report [2]. The patients were invited to participate in the study, and all of them gave informed consent and agreed to participate. The patients' socio-demographic characteristics are presented in Table 1. Most of the patients were female (79.4%) with the average age of 64 years. All patients were Buddhist (100%). Most of them (90.5%) had a limited literacy with the highest education level of primary school (Grade 6). More than half of them were married (58.7%) and unemployed (58.7%). The most common co-morbidities of study patients were diabetes mellitus (77.8%) and hypertension (63.5%), respectively.

Table 1. Socio-demographic characteristics of the study patients ($N = 63$).

Variables	<i>n</i>	%
Gender		
Female	50	79.4
Male	13	20.6
Age (years) mean \pm SD	64	\pm 9.1
min-max	31	79
Religion		
Buddhist	63	100
Educational level		
Uneducated	2	3.2
Primary school	57	90.5
Secondary school or higher level	4	6.3
Marital status		
Married	37	58.7
Widowed	22	34.9
Single	4	6.4
Occupation		
Unemployed or retired	37	58.7
Agriculture	16	25.4
House-work	9	14.3
Own business	1	1.6
Co-morbidity		
Diabetes mellitus	49	77.8
Hypertension	40	63.5
Dyslipidemia	25	39.7
Kidney stones	10	15.9
Gout	5	7.9
Heart diseases	3	4.8
Other diseases	9	14.3

In terms of QOL, depression and spirituality, most of study patients had good QOL, low depression and high spirituality. The median of the WHOQOL-SRPB total scores was 18.0 (interquartile range; IQR = 2.9, range 8.63–20.0), and the median of FACIT-Sp total scores was 44.0 (IQR = 10.0, range 11.0–48.0). The spirituality scores of both measures indicated the high spirituality of these patients. On average, the WHOQOL-SRPB scores of the study patients were greater than those of hemodialysis patients in Brazil [46], and schizophrenia patients in India [47]. Based on the FACIT-Sp scores, the spirituality of the study patients was higher than those of hospitalized elderly patients in Switzerland [48], aortic stenosis patients in USA [49], psychiatric inpatients in Brazil [50], and cancer patients in Iran [51]. On average, 9-THAI PHS and MHS of these patients were within the range of the Thai general healthy population (PHS: median = 48.0, IQR = 20.5, range –18.3–59.1, MHS: median = 32.0, IQR = 38.8, range –13.3–58.5). In terms of depression status as measured by BDI-II, the percentages of patients with minimal, mild, moderate, severe depression were 63.5%, 19%, 14.3%, and 3.2%, respectively.

Table 2 shows the Spearman rho correlation coefficients (r_s) of spirituality, QOL, and depression. Spirituality as measured by WHOQOL-SRPB and FACIT-Sp showed greater associated with mental health and depression than physical health. The r_s of BDI-II depression scores and spirituality were –0.55 (FACIT-Sp) and –0.58 (WHOQOL-SRPB), this showed significant moderate negative associations between depression and spirituality. The associations conformed to the associations of spirituality and mental health as measured by 9-THAI MHS, since the correlations were 0.37 (FACIT-Sp) and 0.46 (WHOQOL-SRPB). However, the associations of physical health as measured by 9-THAI PHS and spirituality showed a lesser degree of relationship with spirituality in that both correlation coefficients were 0.34.

The associations of mental health and spirituality domains of WHOQOL-SRPB and FACIT-Sp were further examined. A noteworthy association between depression and peaceful spirituality was revealed. The r_s of the “Peace” domain of FACIT-Sp with BDI-II scores was –0.62, and this was the highest negative correlation among the three domains of FACIT-Sp and BDI-II scores. Additionally, the r_s of the “Peace” domain of FACIT-Sp and 9-THAI MHS was also the highest (0.42) among the three domains of FACIT-Sp and 9-THAI MHS. In terms of WHOQOL-SRPB “Inner Peace” domain, the r_s with 9-THAI MHS (0.44), and BDI-II scores (–0.59) were also high. The correlations between questions of the questionnaires were then further analyzed (details not shown). The highest negative correlation ($r_s = -0.43$) was found between question no. 5 of 9-THAI (“*During the past 1 month, have you felt depressed, blue, or anxious, or not? If so, to what level?*”) and question no. 4 of the “Peace” domain of FACIT-Sp (“*I have trouble feeling peace of mind*”). The r_s were also high between question no. 5 of 9-THAI and another two questions of the “Peace” domain of FACIT-Sp (“*I am able to reach down deep into myself for comfort*”: 0.40, and “*I feel peaceful*”: 0.37). The further examination of the correlations between questions no. 5 of 9-THAI and the questions of WHOQOL-SRPB revealed the three highest r_s with three questions of the “Inner Peace” domain (“*To what extent do you feel peaceful within yourself?*”: 0.49, “*How much are you able to feel peaceful when you need to?*”: 0.43, and “*To what extent do you have inner peace?*”: 0.42). These results indicated the considerable association between depression and peace. It may be difficult for patients to have a peaceful state of mind, when they feel anxious or depressed.

Table 2. Spearman rho correlation coefficients of spirituality, quality of life, and depression of the study patients ($N = 63$).

Spirituality	Quality of Life: 9-THAI ⁽¹⁾		Depression: BDI-II ⁽²⁾
	Physical health [PHS]	Mental health [MHS]	
WHOQOL-SRPB ⁽³⁾			
Spiritual Connection	0.27	0.39	−0.52
Meaning and Purpose In Life	0.19 *	0.20 *	−0.30
Experiences of Awe and Wonder	0.25 *	0.24 *	−0.36
Wholeness and Integration	0.42	0.48	−0.59
Spiritual Strength	0.23 *	0.35	−0.50
Inner Peace	0.30	0.44	−0.59
Hope and Optimism	0.28	0.42	−0.42
Faith	0.25	0.42	−0.47
Total score	0.34	0.46	−0.58
FACIT-Sp ⁽⁴⁾			
Meaning	0.42	0.39	−0.54
Peace	0.36	0.42	−0.62
Faith	0.12 *	0.18 *	−0.31
Total score	0.34	0.37	−0.55

Notes: All values in the Table are Spearman rho correlations. Values were significant ($p < 0.05$) except for * $p \geq 0.05$; (1) 9-item Thai Health status Assessment Instrument; (2) Beck Depression Inventory II; (3) World Health Organization Quality of Life-Spirituality, Religiousness and Personal Beliefs; (4) Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale.

The r_s of the “Meaning” domain of FACIT-Sp with QOL and depression were also considerable (PHS: 0.42, MHS: 0.39, and BDI-II: −0.54). Details of correlations between questions of the questionnaires were further analyzed. The highest r_s (0.44) was found between that of question no.1 of 9-THAI PHS (“During the past 1 month, have you had difficulty with the mobility of your hand, limb, torso or the whole body or not? If so, to what level?”) and question no. 2 of FACIT-Sp (“I have a reason for living”). Problems with physical mobility might lead to desperation and questioning of the reasons for living. Moreover, the association between the anxiety/depression question and the meaning/purpose question was considerable. The r_s of question no. 5 of 9-THAI and question no. 8 of FACIT-Sp (“My life lacks meaning and purpose”) was 0.44. In addition, the r_s of question no. 8 of FACIT-Sp and BDI-II scores was −0.49. When patients feel depressed, they may be desperate and think that their lives have no meaning. The associations of “Meaning and Purpose In Life” domain of WHOQOL-SRPB with QOL and depression (PHS: 0.19, MHS: 0.20, and BDI-II: −0.30) were less than those of the “Meaning” domain of FACIT-Sp with QOL and depression. The weaker relationships resulted from the very low correlations of the “Purpose In Life” item with QOL/depression, since the r_s of the question “To what extent do you feel your life has a purpose?” (WHOQOL-SRPB) and 9-THAI PHS, MHS, BDI-II were 0.03, −0.03, and −0.05, respectively. The belief of lack of control of one’s life, the inheritance of the last life into the present life, and the expectation of many future lives make the question of “the purpose of life” less relevant for Buddhists. Western culture focuses on

maximizing one's achievements in a single present life, particularly for Christians, so "purpose of life" has great importance. The ultimate reality paradigm of Buddhism leads to realistic hope and living goals [39], and thus the purpose of life is less relevant for Thai Buddhists.

The relationship of the 'Wholeness and Integration' domain of WHOQOL-SRPB and QOL (PHS: 0.42, MHS: 0.48, and BDI-II: -0.59) was further examined. The relationship of the question "*To what extent do you feel the way you live is consistent with what you feel and think?*" of WHOQOL-SRPB and all four questions of 9-THAI PHS were noteworthy (9-THAI questions no. 1–4; $r_s = 0.41, 0.43, 0.48, 0.32$, respectively). The four questions assessed the problems of mobility, self-care, usual works, and illness/ discomfort; thus, these problems might lead to patients having undesirable lives. In terms of mental health and depression, the two questions of the "Wholeness and Integration" domain of WHOQOL-SRPB, "*How satisfied are you that you have a balance between mind, body and soul?*" and "*To what extent do you feel any connection between your mind, body and soul?*", significantly associated with anxiety and depression question of 9-THAI (question no. 5) ($r_s = 0.37, 0.33$, respectively) and BDI-II scores ($r_s = -0.50, -0.44$, respectively). The depression condition may lead to imbalance of mind, body, and soul.

4. Discussion

This is the first quantitative study of spirituality in Thai CKD patients, where all study patients are Buddhists. Most spiritual studies in CKD patients were conducted in Western cultures, and patients were mainly Christian. The spirituality and beliefs of Thai people are influenced by the Dhamma of the Buddha and other supernatural beliefs. This study was conducted to firstly explore spirituality and its associations with QOL/depression, and to answer whether the associations would be similar to those previously observed in Western countries. The results of this study revealed consistent evidence as shown in previous studies [26,27]. The results were as expected that spirituality was positively associated with QOL, and negatively associated with depression. Moreover, the associations of QOL and spirituality were explored in detail, and a greater association between spirituality and mental health was found when comparing with the association between spirituality and physical elements. The greater association between mental and spiritual elements was consistent with previous studies [40]. Depression was closely related with lack of peacefulness and meaning of life, and imbalance of mind, body, and soul. This information is potentially useful for healthcare professionals since understanding spirituality might lead to better management of depression in CKD patients if future research can demonstrate that provider knowledge of patient spirituality leads to better outcomes. However, the results should be cautiously applied, since study patients were limited to only CKD patients in one healthcare center. Still, this study opens the door to further research on Thai dialysis patients, associations between spirituality and survival, spirituality intervention, *etc.*

5. Conclusions

In summary, spirituality was found to be positively associated with QOL, and negatively associated with depression. Spirituality was more associated with mental health than physical health and depression played an important role in the association. Healthcare professionals should be concerned

with the spirituality of CKD patients, since understanding spirituality might lead to less depression and prolonging of patient lives.

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Author Contributions

Waraporn Saisunantararom and Areewan Cheawchanwattana are principal investigators of the study. We designed the study and developed the proposal for approval by the ethics committee, analyzed the data using statistical methods, and drafted the manuscript. Waraporn Saisunantararom interviewed patients. Talerngsak Kanjanabuch and Maliwan Buranapatana contributed in the processes of proposal finalization and WHOQOL-SRPB translation. Kornkaew Chanthapasa contributed to the draft manuscript. The final manuscript was approved by all authors.

Conflicts of Interest

The authors declare no conflicts of interest.

Abbreviations

QOL: quality of life;

CKD: chronic kidney disease;

FACIT-Sp: Functional Assessment of Chronic Illness Therapy—Spiritual Well-Being;

WHOQOL-SRPB: WHOQOL Spirituality, Religiousness and Personal Beliefs;

BDI-II: Beck Depression Inventory-II;

9-THAI: 9-item Thai Health status Assessment Instrument;

rs: Spearman rho correlation coefficient.

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