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The influence of spirituality on psychological resilience in cancer patients undergoing oncological treatment: a cross-sectional study

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Abstract

Introduction Spirituality and resilience have been studied as possible factors influencing psychological adjustment in cancer patients. However, the evidence on their relationship remains inconsistent, and their impact in this context is not fully established.

Objective This study assessed the influence of spirituality on psychological resilience in cancer patients undergoing chemotherapy and/or radiotherapy.

Methods This cross-sectional observational study included 170 oncology outpatients who were receiving chemotherapy and/or radiotherapy at a specialized oncology center in Peru. Spirituality was measured with the Spiritual Perspective Scale (SPS) and resilience with the Wagnild and Young Resilience Scale. Spearman correlation coefficient (r_s) analyses and multiple linear regression models adjusted for age, gender, educational level, socioeconomic status, clinical stage, and comorbidities were applied.

Results A significant positive correlation was found between spirituality and resilience (r_s=0.53, $p<0.001$). The spiritual beliefs dimension exhibited a stronger association with resilience (r_s=0.56, $p<0.001$) compared to spiritual practices (r_s=0.28, $p<0.001$). In the multivariate analysis, spiritual beliefs (β = 2.38; 95%CI: 1.92–2.83) and a higher educational level (β = 12.61; 95%CI: 6.27–18.95) were significant predictors of higher resilience.

Conclusions Spirituality, particularly spiritual beliefs, had a positive influence on resilience in cancer patients, regardless of educational level. These findings enhance the need to integrate the spiritual approach in psycho-oncological care to contribute to patients' emotional well-being. However, further studies are required to deepen this relationship and explore its impact in different clinical contexts.

Implications for practice Including spiritual assessments, especially spiritual beliefs, in clinical practice may enhance personalized approaches to optimize psycho-oncological care.

Keywords Neoplasms, Spirituality, Psychological resilience, Psycho-Oncology, Psychological adaptation

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Introduction

Cancer represents one of the leading causes of morbidity and mortality worldwide, with 19,976,499 new cases and 9,743,832 deaths registered in 2022, corresponding to incidence and mortality rates of 196.9 and 91.7 per 100,000 inhabitants, respectively [1]. In Peru, the impact of this disease is also significant, with 72,827 new cases and 35,934 deaths reported during the same period. Among these, prostate cancer in men (25.4%) and breast cancer in women (19.9%) are the most prevalent. However, stomach cancer remains the leading cause of cancer-related mortality in both sexes [2].

Cancer represents a traumatic event with profound physical, emotional, and psychological implications for patients [3]. Several studies have documented that cancer patients experience responses consistent with those of post-traumatic stress disorder, attributing to cancer the role of a stressor that threatens psychological and emotional stability [4–6], with persistent manifestations influenced by both psychosocial and biological factors such as prior trauma, inflammation, and hormonal dysregulation [7].

Resilience, commonly understood as the ability to adapt positively to adversity, is considered an important psychological resource in coping with cancer [8, 9]. Its development is shaped by multiple demographic, psychological, and behavioral factors, including education, income, time since diagnosis, self-efficacy, and physical activity [10–12].

Spirituality, understood as the pursuit of meaning, purpose and transcendental connection, has been recognized as a key element in coping with serious illness [13, 14]. In cancer patients, particularly those in advanced stages, spirituality has been associated with improved emotional, social, and physical functioning [15, 16], greater sense of purpose and resilience [17], and better psychological adjustment to emotional distress and existential challenges [18]. In Latin American settings, where religiosity is culturally embedded, spiritual and religious practices have been associated to enhanced treatment adherence, emotional stability and hope [19].

The joint analysis of resilience and spirituality in oncology patients is essential to understand coping strategies in contexts of high emotional vulnerability [20]. Likewise, resilience mediates the relationship between spirituality and psychological well-being, supporting its relevance in the development of holistic interventions aimed at enhancing patient-centered care [21]. In a recent study of Turkish women undergoing chemotherapy for breast cancer, spirituality was found to contribute to explaining psychological resilience, suggesting a positive association between spiritual resources and the capacity to cope with treatment-related stress [22].

As highlighted by Delgado-Guay et al., Latin American patients with advanced cancer frequently report high levels of spiritual pain and unmet spiritual needs, both of which are strongly associated with increased psychological distress and reduced quality of life [20]. Within this context, examining the relationship between spirituality and resilience among oncology patients in Peru provides valuable insights for the development of culturally sensitive psycho-oncological care models tailored to Latin American populations with similar cultural, religious, and socioeconomic characteristics.

Therefore, this study assessed the influence of spirituality on psychological resilience in cancer patients undergoing chemotherapy and/or radiotherapy at an oncology center in Peru. Understanding this interaction could contribute to developing more integrative care strategies aligned with patients' psychosocial needs and support the implementation of interventions that promote holistic well-being.

Methods

Design

This observational study employed a quantitative approach with an analytical cross-sectional design. The study was conducted in 2024 at the Peruvian Institute of Oncology and Radiotherapy (IPOR), a specialized private oncology center located in Lima, Peru. The selected clinical setting provides a relevant context for evaluating spirituality and psychological resilience, as it delivers specialized care to patients with an oncological diagnosis.

Sample

The study included adult oncology patients (≥ 18 years old) undergoing chemotherapy or radiotherapy at the IPOR, who voluntarily agreed to participate by signing an informed consent form and were cognitively able to complete the study questionnaires. Patients who withdrew from the study, failed to complete key study variables, or presented with a diagnosed mental disorder or treatment condition that limited their ability to respond were excluded.

A non-probabilistic convenience sampling technique was used. Patients were recruited consecutively during their scheduled clinical visits to the chemotherapy and radiotherapy departments.

The sample size was estimated using EPIDAT version 4.1. A type I error of 0.05 and a type II error of 0.20 were considered, based on a correlation coefficient of 0.22 reported by Yıldırım Üşenmez T. et al. [22]. This calculation resulted in a minimum required sample size of 159 participants. In the present study, a total of 170 cancer patients who met the predefined inclusion and exclusion criteria were successfully enrolled.

Data collection instruments

Spiritual Perspective Scale (SPS)

This scale was developed by Redd in 1987 to assess spiritual attitudes and convictions regarding an individual's connection with a higher being or supreme existence. The instrument consists of 10 items: four assessing "spiritual practices" (maximum score: 24) and six assessing "spiritual beliefs" (maximum score: 36), all rated on a six-point Likert scale [23]. Likewise, the Spanish version of the instrument has demonstrated an internal consistency, with Cronbach's alpha ranging from 0.85 to 0.90 [24].

Resilience Scale (RS)

The Resilience Scale was developed by Wagnild and Young in 1993 to assess two main factors: Factor I (Personal Competence), and Factor II (Self-Acceptance). In addition, it includes five core dimensions: Equanimity, Perseverance, Self-confidence, Personal Satisfaction, and Feeling Good in Solitude. The Spanish version has demonstrated good internal consistency, with a Cronbach's alpha coefficient of 0.87 [25].

Procedures

The study protocol was approved by the Research Ethics Committee of the Peruvian Institute of Oncology & Radiotherapy (IPOR), Lima, Peru (Approval ID: CIEI001.24). Prior to data collection, all members of the research team underwent standardized training in research ethics, patient communication, and instrument administration to ensure methodological rigor and data integrity.

The study was introduced to all oncology outpatients undergoing chemotherapy and/or radiotherapy. The purpose, procedures, and ethical considerations of the study were explained in detail, and participation was entirely voluntary. Data collection instruments were administered only to those who provided written informed consent.

Data was collected directly by four trained research team members. These individuals were responsible for screening patients based on eligibility criteria, inviting them to participate, and administering the Spiritual Perspective Scale and the Resilience Scale. Standardized procedures were strictly followed to ensure consistency across participants and to protect the confidentiality of sensitive information. Recruitment and questionnaire administration took place in designated areas within the outpatient chemotherapy and radiotherapy units.

Additionally, clinical data related to cancer diagnosis and treatment were extracted from patients' medical records and recorded in a structured data collection form following each treatment session. To preserve anonymity, each participant was assigned a unique alphanumeric identification code.

All questionnaire and clinical data were entered into a password-protected Excel database and reviewed weekly by one member of the research team to ensure completeness and accuracy. Data preprocessing and statistical analyses were subsequently performed by another team member who was not involved in patient recruitment, data collection, or data monitoring, thereby ensuring analytical independence.

Data analysis

Data analysis was conducted using descriptive and inferential statistical methods to evaluate the relationship between spirituality and psychological resilience in oncology patients. Continuous variables were presented as the means and standard deviations or as medians and interquartile ranges, depending on the distribution of the data. Categorical variables were described using absolute frequencies and percentages.

To assess the relationship between spirituality and resilience, the Spearman rank correlation coefficient (r_s) was calculated to estimate the strength and direction of the association. Pearson's correlation coefficient was not applied because the statistical assumptions required for its use, particularly the assumption of univariate normality of the variables, were not satisfied. Subsequently, multiple linear regression models were used to evaluate the effect of spirituality on resilience while adjusting for potential confounding variables such as age, gender, educational attainment, socioeconomic status, clinical stage, and the presence of comorbid conditions. Regression coefficients were reported with their corresponding 95% confidence intervals. A p-value of < 0.05 was considered statistically significant. All analyses were performed using STATA software, version 16.

Ethical aspects

This study was reviewed and approved by the Research Ethics Committee of the Peruvian Institute of Oncology and Radiotherapy (IPOR), Lima, Peru (Approval ID: CIEI001.24), in accordance with the ethical principles established in the Declaration of Helsinki and the international guidelines of the Council for International Organizations of Medical Sciences (CIOMS) for research involving human participants. All participants provided written informed consent after receiving comprehensive information about the study's objectives, procedures, potential risks, and anticipated benefits. Confidentiality and anonymity were rigorously maintained throughout the research process. All data were used exclusively for scientific purposes and analyzed in aggregated form to prevent the identification of individual participants. The study did not introduce any additional risks beyond standard clinical care, and the research team declared no conflicts of interest.

Results

A total of 170 oncology patients were included, with a mean age of 57.9 ± 13.2 years. The majority were female (67.65%), and most identified as Catholic (62.35%), followed by Christian (17.65%) and Evangelical (15.88%). University (44.1%) and high school education (32.9%) were the most common. Socioeconomic levels B (28.2%) and C (32.4%) predominated. The majority of patients were covered by public health insurance schemes, including EsSalud (32.4%) and Minsa (21.8%), while 34.1% had private insurance. Detailed sociodemographic characteristics are presented in Table 1.

The most prevalent cancer types were breast cancer (21.76%), pancreatic (10.00%), and prostate cancer (10.00%). A total of 63.52% of patients were in clinical stages I or II. The median time since diagnosis was 12 months. Most participants reported no comorbidities, while diabetes (7.06%) and hypertension (4.71%) were the most frequent among those with additional conditions. (Table 2).

The descriptive analysis of spirituality and resilience scores is presented in Table 1 of the Supplementary Material. The overall spirituality score had a mean of 40.67 ± 9.61 and a median of 39. Among its subdimensions, spiritual practices had a mean of 16.11 ± 4.51, while spiritual beliefs averaged 24.57 ± 6.97. Regarding resilience, the overall mean score was 120.07 ± 25.05, with a median of 113. For Factor 1 (Personal Competence), the

Table 1 Description of sociodemographic characteristics in oncology patients

Characteristics	No (*N* = 170)	*n* (%)
Gender		
-Male	55	32.35
-Female	115	67.65
Age (years)*	57.89 ± 13.16	
Religion		
-Catholic	106	62.35
-Christian	30	17.65
-Jehovah's Witness	5	2.94
-Evangelical	27	15.88
-Mormon	2	1.18
Marital Status		
-Single	36	21.18
-Married	63	37.06
-Cohabitant	20	11.76
-Widowed	19	11.18
-Separated	12	7.06
-Divorced	20	11.76
Spouse's Beliefs		
-Non-believer	15	8.82
-Believer	119	70.00
-No spouse (not assessed)	36	21.18
Level of Education		
-Elementary	10	5.88
-High School	56	32.94
-University	75	44.12
-Technical	29	17.06
Socioeconomic level		
-SEL A (5000 Soles per month)	10	5.88
-SEL B (2500 to 5000 Soles)	48	28.24
-SEL C (1000 to 2500 Soles)	55	32.35
-SEL D (500 to 1000 Soles)	35	20.59
-SEL E (less than 500 Soles)	22	12.94
Type of insurance		
-Essalud	55	32.35
-Minsa	37	21.76
-Private	58	34.12
-Armed Forces	20	11.76

*Mean ± standard deviation

Table 2 Description of clinical features in oncology patients

Characteristics	No (*N* = 170)	*n* (%)
Cancer Diagnosis		
-Breast cancer	37	21.76%
-Pancreatic cancer	17	10.00%
-Prostate cancer	17	10.00%
-Gastric cancer	13	7.65%
-Lung cancer	12	7.06%
-Colorectal cancer	11	6.47%
-Bladder cancer	10	5.88%
-Head and neck cancer	10	5.88%
-Liver cancer	8	4.71%
-Other	35	20.59%
Clinical stage		
-Stage I	54	31.76%
-Stage II	54	31.76%
-Stage III	46	27.06%
-Stage IV	16	9.41%
Time since diagnosis (months) **	12 (IQR: 1-156)	
Comorbidities		
-None	129	75.88%
-Diabetes	12	7.06%
-Respiratory diseases	3	1.76%
-Hypertension	8	4.71%
-Other	18	10.59%

** Median (IQR: interquartile range)

Table 3 Correlation between resilience and spirituality in oncology patients

Factor	Resilience	
	Correlation Coefficient (r_s)	*P*-value
Overall Spirituality	0.53	< 0.001
Spirituality: Beliefs dimension	0.56	< 0.001
Spirituality: Practices dimension	0.28	< 0.001

r_s: Spearman's correlation coefficient

mean was 72.36 ± 15.86, and for Factor 2 (Self-Acceptance), the mean was 47.71 ± 10.35. (See Supplementary Material, Table 1).

Spearman's rank correlation analysis revealed statistically significant positive associations between spirituality and psychological resilience. Overall spirituality demonstrated a moderate correlation with resilience (r_s = 0.53, $p < 0.001$), with the beliefs dimension showing the strongest association (r_s= 0.56, $p < 0.001$). In contrast, the practices dimension exhibited a weaker but still statistically significant correlation (r_s = 0.28, $p < 0.001$). These findings suggest that personal beliefs may be more closely associated with psychological resilience than spiritual practices in this oncological setting (Table 3).

Two multiple linear regression models were conducted to assess the influence of spirituality on psychological resilience in cancer patients undergoing chemotherapy or radiotherapy, adjusted for sociodemographic and clinical variables.

In Model A, higher overall spirituality was significantly associated with greater psychological resilience (β = 1.51; 95% CI: 1.19 to 1.83; $p < 0.001$). In Model B, when spirituality was disaggregated into its components, the beliefs dimension remained a strong and statistically significant predictor of resilience (β = 2.38; 95% CI: 1.92 to 2.83; $p < 0.001$), while the practices dimension showed no significant association (β = 0.18; 95% CI: – 0.50 to 0.85; $p = 0.61$).

University-level education and the presence of comorbidities were both positively associated with higher resilience across models. Additionally, clinical stage III was significantly associated with greater resilience only in Model B, which analyzed the distinct dimensions of spirituality. Complete estimates are presented in Table 4.

Discussion

This study identified a positive association between spirituality and psychological resilience in cancer patients undergoing chemotherapy and/or radiotherapy. Among the dimensions of spirituality, spiritual beliefs demonstrated a stronger relationship with resilience compared to spiritual practices. In the multivariate analysis, while overall spirituality remained significantly associated with resilience, only the dimension of spiritual beliefs emerged as an independent contributing factor. Furthermore, higher levels of resilience were also associated with

Table 4 Association between psychological resilience and spirituality (overall and by dimension), adjusted for sociodemographic and clinical variables

Factor	β (Model A)	*p*-value	β (Model B)	*p*-value
Spirituality				
– Overall score	1.51 (1.19 to 1.83)	< 0.001	—	—
–Spiritual practices	—	—	0.18 (–0.50 to 0.85)	0.61
–Spiritual beliefs	—	—	2.38 (1.92 to 2.83)	< 0.001
Age	–0.14 (–0.39 to 0.09)	0.23	–0.12 (–0.34 to 0.10)	0.29
Gender				
– Male	—	—	—	—
– Female	–1.37 (–8.05 to 5.31)	0.69	–2.01 (–8.23 to 4.20)	0.52
Educational level				
– Primary / High school	Reference	—	Reference	—
– Technical	2.25 (–6.54 to 11.14)	0.62	5.50 (–2.74 to 13.73)	0.19
– University	13.50 (6.62 to 20.38)	< 0.001	12.61 (6.27 to 18.95)	< 0.001
Socioeconomic level				
– < 1000 soles	Reference	—	Reference	—
–1000–2500 soles	2.47 (–4.85 to 9.79)	0.51	2.61 (–4.41 to 9.64)	0.46
– ≥ 2500 soles	0.07 (–7.53 to 7.66)	0.99	3.26 (–4.32 to 10.84)	0.40
Clinical stage				
–Stage I	Reference	—	Reference	—
– Stage II	0.81 (–6.71 to 8.33)	0.83	0.46 (–6.47 to 7.39)	0.90
– Stage III	6.51 (–1.53 to 14.56)	0.11	7.83 (0.39 to 15.27)	0.04
– Stage IV	4.70 (–6.77 to 16.18)	0.42	3.46 (–7.11 to 14.04)	0.52
Comorbidity				
– Absent	Reference	—	Reference	—
– Present	9.13 (1.61 to 16.65)	0.02	8.82 (1.87 to 15.77)	0.01

Model A includes the overall spirituality score as a single predictor. Model B includes spirituality disaggregated into beliefs and practices dimensions. β: unstandardized regression coefficient; CI: confidence interval. Statistically significant values ($p < 0.05$) are shown in bold

patient characteristics such as educational attainment, clinical stage, and the presence of comorbid conditions.

Existing evidence identifies spirituality as a central psychological resource in the context of serious illness, particularly in relation to emotional regulation and adaptive coping [26]. Our findings reinforce this perspective, showing that spiritual beliefs are more strongly associated with resilience than spiritual practices. This suggests that internalized dimensions of spirituality—such as trust in a higher power, existential insight, and the search for meaning—may offer a more stable and enduring emotional framework for navigating cancer-related adversity [15, 27]. These beliefs may enable patients to reinterpret their diagnosis in ways that reduce existential distress, sustain hope, and foster psychological growth [17, 18].

This interpretation aligns with previous research indicating that spirituality contributes to emotional regulation, facilitates identity reconstruction, and promotes positive reappraisal of the illness experience [28]. In contrast, spiritual practices tend to involve externally observable behaviors that, while potentially beneficial, are more context-dependent. Their impact may be reduced under conditions of heightened psychological stress or limited access to spiritual or religious environments [29, 30]. These distinctions underscore the importance of evaluating both the cognitive-existential and behavioral dimensions of spirituality when designing psycho-oncological interventions.

These findings reinforce the importance of incorporating spiritual dimensions into psycho-oncological assessment and intervention. They also emphasize the need to distinguish between belief-based and behavior-based spiritual expressions when designing patient-centered care strategies, particularly in culturally diverse populations where spirituality is deeply embedded in the coping process [19, 20].

Our study found that patients with stage III cancer exhibited higher levels of psychological resilience than those in stage I. Although this may initially seem counterintuitive, recent evidence suggests that resilience can be activated and even enhanced as the illness becomes more salient. In oncology, resilience is increasingly understood as a dynamic process that begins with psychological disruption and evolves—through self-reflection, meaning-making, and emotional recalibration—toward acceptance and post-traumatic growth [28]. The confrontation with the uncertainty and existential threat posed by a more advanced diagnosis may serve as a catalyst for deeper emotional engagement, redefinition of life priorities, and

the activation of coping mechanisms that foster psychological stability [15, 16].

Furthermore, longitudinal research has demonstrated that resilience trajectories are not static but can shift positively over time, particularly among patients who receive structured psychosocial interventions or who rely on internal coping resources such as spirituality, existential meaning, or cultural belief systems [31]. In this sense, the higher resilience observed in patients with stage III cancer may reflect a more advanced phase of psychological adaptation, shaped by the gravity of the illness and sustained by meaning-centered strategies. These findings reinforce the importance of assessing not only disease severity but also the subjective and cultural frameworks through which patients interpret and respond to their diagnosis.

In addition to spirituality, higher educational attainment was associated with greater resilience. This may be due to improved access to health information, stronger self-advocacy skills, and more developed coping strategies among university-educated individuals [32]. A related finding showed that patients with comorbidities also demonstrated higher levels of resilience, possibly as a result of cumulative exposure to health-related stressors that may have enhanced their emotional adaptability and coping capacity [30]. However, it is important to recognize that comorbid conditions can also burden patients and negatively affect quality of life, underscoring the need to consider both the quantity and complexity of comorbidities in future psycho-oncological planning [33].

Implications for policy, practice and research

Our findings reinforce the importance of spirituality in the resilience of cancer patients, particularly in the dimension of spiritual beliefs. These results provide evidence of the potential value of spirituality as a complementary resource in psycho-oncological care, emphasizing its contribution to emotional regulation, the reframing of illness-related adversity, and the activation of meaning-based coping. Recent qualitative metasynthesis identified spirituality not only as a form of existential reframing and emotional relief, but also as a powerful strategy for fostering resilience in both patients and their caregivers [34].

Despite the growing recognition of spiritual well-being within palliative care, it remains inadequately addressed through structured clinical interventions, even though its association with improved emotional outcomes and reduced psychological distress is well documented [35]. Our findings advocate for the systematic integration of spiritual assessments and interventions into psycho-oncological programs, particularly within culturally sensitive frameworks. Future research should prioritize the development and validation of standardized clinical protocols and assessment tools that address spiritual needs and measure related outcomes. In parallel, health policy should promote the training of healthcare professionals in spiritual care competencies to ensure more holistic, person-centered, and compassionate cancer care.

Strengths and limitations of the study

This study presents strengths, including multivariate analyses that allowed control of possible confounding factors and an adequate sample size for evaluating the associations studied. However, certain limitations should be considered. First, the cross-sectional nature of the study precludes establishing causal relationships between spirituality and resilience. In addition, self-administered questionnaires could have introduced information biases as the assessment of spirituality and resilience is based on subjective self-perception and may be influenced by individual differences in interpretation or response style.

Conclusions

This study provides evidence of the influence of spirituality, particularly the dimension of spiritual beliefs, on psychological resilience in cancer patients undergoing oncological treatment. The findings suggest that a strong connection to spiritual beliefs may play a crucial role in psychological adjustment to illness, supporting the development of more effective coping strategies.

Additionally, factors such as higher educational attainment, the presence of comorbidities, and the progression of the clinical stage were also associated with resilience. These associations reinforce the understanding of resilience as a dynamic and multifactorial process shaped by both individual and clinical characteristics and requiring a comprehensive approach in cancer care.

Although the study provides information relevant to psycho-oncological management, its cross-sectional design limits the potential for establishing causal relationships. Longitudinal studies are needed to evaluate the effectiveness of spirituality-based interventions in improving resilience and well-being in cancer patients. Moreover, exploring this relationship across diverse cultural contexts will be essential for developing tailored and equitable approaches to psycho-oncological care.

Supplementary Information

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Supplementary Material 1

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Author contributions
AG designed and developed the study, interpreted the data, and drafted the manuscript. CM, XN, and LL participated in the formulation of the research question and assisted in data collection and interpretation; SS, WR, and ME contributed to the study design and data analysis and interpretation. All authors reviewed and approved the final version of the manuscript.

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Data availability
The data that support the findings of this study are available on request from the corresponding author.

Declarations

Ethics approval and consent to participate
This study was approved by the Research Ethics Committee of the Peruvian Institute of Oncology and Radiotherapy (IPOR), Lima, Peru (Approval ID: CIEI001.24). Prior to participation, all individuals received a written informed consent form detailing the objectives, procedures, and ethical safeguards of the study. The form was read aloud to participants upon request to ensure comprehension. Informed consent was obtained in writing from all participants before the administration of any questionnaires.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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