Spiritual and Knowledge level, and the Acceptance of Patients with Chronic Renal Failure Who Underwent Hemodialysis

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ABSTRACT
Background: Spirituality and knowledge levels have been correlated to the patient’s adaptive ability to accept their condition among patients with chronic renal failure (CRF) undergoing hemodialysis. Objective: This study aimed to determine the relationship between the spiritual and knowledge levels with the acceptance of hemodialysis among patients in PKU Muhammadiyah Yogyakarta. Methods: an analytic cross-sectional study was conducted on 101 patients who underwent hemodialysis. Data collection was done utilizing the Daily Spiritual Experience Scale questionnaire, knowledge level of hemodialysis, and Illness Cognition Questionnaire. The Spearman correlation and multiple linear regression tests were used to analyze the results with \( p \) < 0.05 considered significant. Results: The majority of patients have a high spiritual level, level of knowledge, and acceptance. There is a significant relationship between the spiritual level and knowledge level in the acceptance of CRF patients undergoing hemodialysis with a \( p \)-value of 0.000. Linear multiple regression analysis showed that the spiritual level has more influence on acceptance than other factors with a beta value of 0.550. Conclusion: Spiritual and knowledge levels might influence the acceptance of patients with CRF undergoing hemodialysis. The spiritual level is the most influencing factor in acceptance. Dialysis nurses are advised to improve their ability to provide spiritual nursing care and promote better knowledge to patients undergoing hemodialysis.

Keywords: spiritual, knowledge, acceptance, chronic renal failure, hemodialysis

INTRODUCTION
Chronic kidney failure (CRF) has been a world health problem that continues to increase in both its morbidity and mortality. It is estimated that the global prevalence of chronic renal failure is around 13.4% in 2017. Indonesia is one of the countries with a high number of people with CRF at 2%. The Indonesian Renal Registry (IRR) in 2017 reported a very significant increase in the number of new patients with CRF in Indonesia from 4,977 in 2007 to 30,831 people in 2017. Meanwhile, in the province of Yogyakarta there were 359 new patients in 2017.

Hemodialysis is one of the most common treatments for people with CRF in Indonesia. However, several complications might occur following this treatment such as disruption of the process of thinking and concentration, discomfort, stress, with challenges related to spiritual aspects, as well as social and economic status, and family dynamics. Thus, the ability to adapt might influence the people in accepting their condition. Furthermore, it is argued that the level of spirituality is closely related to biological, psychological, and social changes among patients with CRF.

Spirituality is a belief in a relationship between humans and God; a human needs to maintain their beliefs and fulfill their religious needs. Hence, someone will be cooperative and optimistic the closer he or she is to God, which can help to cope with the treatment and treatment process. In other words, the inability to accept will lead to a more pessimistic and uncooperative manner which will hinder the care and treatment of the disease.

For some people, spiritual needs are required to be fulfilled to overcome feelings of despair, anxiety, isolation, uncertainty, loss and death. Furthermore, the practice of religious rituals in daily life will improve the patient’s adaptability to coping with the circumstances. Among Muslims, performing prayers five times a day might help the patient in accepting oneself and her or his illness patiently and steadily.

Another factor that might also influence acceptance among patients with CRF undergoing hemodialysis is their level of knowledge. A better awareness of the nature of the illness and the treatment that should be taken would enhance their
willingness to accept the challenges of their condition\(^6\).

This study aimed to determine the relationship between the spiritual level and the level of knowledge on the reception of patients with CRF who undergo hemodialysis in the hemodialysis room of PKU Muhammadiyah Hospital in Yogyakarta.

**METHODOLOGY**

This analytic correlation research was conducted with a cross-sectional approach. The sample in this study were patients with CRF who underwent hemodialysis in the hemodialysis room of PKU Muhammadiyah Hospital in Yogyakarta who fulfilled the inclusion criteria, namely: patients with CRF who had undergone hemodialysis for more than one year and the exclusion criteria were: respondents who experienced and being treated with psychological disorders. Of 114 patients approached, 101 people were willing to give consent (88.6% acceptance). The instrument used in this study was the Indonesian version of the Daily Spiritual Experience Scale (DSES) questionnaire\(^8\) with 16 question items and a minimum-maximum value of 15-90 to measure the spiritual level. Also, we used a knowledge questionnaire about hemodialysis with 17 question items and a minimum-maximum value of 0-17 to measure the level of knowledge and the Indonesian version of the Illness Cognition Questionnaire (ICQ) with 18 question items and a maximum-minimum value of 18-72 to measure acceptance with the validity value of 0.65 – 0.79 and reliability of 0.88 – 0.91, which means good reliability\(^10\).

Univariate analysis was used to obtain the demographic frequency distribution (age, sex, education level, occupational status, and duration of hemodialysis), spiritual level and acceptance of the patients with CRF undergoing hemodialysis. Bivariate analysis was used to determine the relationship of the spiritual level to the acceptance of the patients with CRF undergoing hemodialysis using the Spearman correlation (\(r\)) statistical test. The multivariate analysis determined which independent variable has the most influence on the dependent variable using multiple regression linear tests. This study has obtained a research ethics permit from the Ethical Committee of UNISSULA (number: 019 / A.1 / FIK-SA / I / 2019).

**RESULTS**

**Characteristics of Respondents**

Table 1 shows that the average age of the respondents is 51 years, all of them are Muslims and coming from Javanese culture, more than a half are male, almost one third of the respondents were highly educated, and did not have occupation, more than half of respondents had undergone hemodialysis during 12-60 months and most of the respondents were accompanied by the family during the hemodialysis process.

<table>
<thead>
<tr>
<th>Characteristics of Respondents</th>
<th>n</th>
<th>%</th>
<th>Mean±SD</th>
<th>Min-Max</th>
<th>Acceptance r</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-35 years</td>
<td>8</td>
<td>7.9</td>
<td>51.5±10.8</td>
<td>28-71</td>
<td>-0.157</td>
<td>0.118</td>
</tr>
<tr>
<td>36-45 years</td>
<td>23</td>
<td>22.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46-55 years</td>
<td>30</td>
<td>29.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56-65 years</td>
<td>30</td>
<td>29.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>66-75 years</td>
<td>10</td>
<td>9.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.127</td>
<td>0.205</td>
</tr>
<tr>
<td>Male</td>
<td>59</td>
<td>58.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>42</td>
<td>41.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Education Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.205*</td>
<td>0.039</td>
</tr>
<tr>
<td>No school</td>
<td>3</td>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary school</td>
<td>12</td>
<td>11.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior high school</td>
<td>17</td>
<td>16.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior high school</td>
<td>37</td>
<td>36.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D3/S1/S2</td>
<td>32</td>
<td>31.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Job Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.056</td>
<td>0.575</td>
</tr>
<tr>
<td>Does not work</td>
<td>28</td>
<td>27.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>22</td>
<td>21.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entrepreneur/Trader</td>
<td>17</td>
<td>16.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artists/Writers/Laborers</td>
<td>3</td>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retired</td>
<td>16</td>
<td>15.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private employees</td>
<td>4</td>
<td>4.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil servants</td>
<td>11</td>
<td>10.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Duration of Hemodialysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.213*</td>
<td>0.033</td>
</tr>
<tr>
<td>12-60 months</td>
<td>57</td>
<td>56.4</td>
<td>63.4±42.6</td>
<td>12-170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61-120 months</td>
<td>33</td>
<td>32.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>121-180 months</td>
<td>11</td>
<td>10.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Families accompanying</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.202*</td>
<td>0.043</td>
</tr>
<tr>
<td>Yes</td>
<td>67</td>
<td>66.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>34</td>
<td>33.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Level of Spiritual, Knowledge, and Acceptance

Table 2 shows that all variables have a relatively high score.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Median</th>
<th>Min–Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spiritual Level</td>
<td>67</td>
<td>49–88</td>
</tr>
<tr>
<td>Knowledge Level</td>
<td>13</td>
<td>10–17</td>
</tr>
<tr>
<td>Acceptance</td>
<td>54</td>
<td>39–67</td>
</tr>
</tbody>
</table>

Based on the value of the correlation (r), the spiritual level has an r value of 0.806 and a level of knowledge of 0.711 and both have a positive and strong correlation with acceptance, which means the higher the patient’s spiritual acceptance and the higher the patient’s knowledge, then the higher is their acceptance.

Table 3: Analysis of the Relationship of Spiritual Levels to the Acceptance of Patients with Chronic Renal Failure in Undergoing Hemodialysis (n = 101)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Acceptance r</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spiritual Level</td>
<td>0.806**</td>
<td>0.000</td>
</tr>
<tr>
<td>Knowledge Level</td>
<td>0.711**</td>
<td>0.000</td>
</tr>
<tr>
<td>Spiritual aspects 1. Relationship</td>
<td>0.532**</td>
<td>0.000</td>
</tr>
<tr>
<td>2. Transcendent/spiritual activity</td>
<td>0.417**</td>
<td>0.000</td>
</tr>
<tr>
<td>3. Comfort and strength</td>
<td>0.692**</td>
<td>0.000</td>
</tr>
<tr>
<td>4. The feeling of peace</td>
<td>0.500**</td>
<td>0.000</td>
</tr>
<tr>
<td>5. Feel the help of</td>
<td>0.379**</td>
<td>0.000</td>
</tr>
<tr>
<td>6. Feel the guidance</td>
<td>0.422**</td>
<td>0.000</td>
</tr>
<tr>
<td>7. Percept and feel God’s love</td>
<td>0.515**</td>
<td>0.000</td>
</tr>
<tr>
<td>8.</td>
<td>0.543**</td>
<td>0.000</td>
</tr>
<tr>
<td>9. Appreciation and gratitude</td>
<td>0.407**</td>
<td>0.000</td>
</tr>
<tr>
<td>10.</td>
<td>0.310**</td>
<td>0.002</td>
</tr>
</tbody>
</table>

Table 3 also shows each aspect of spiritual level, which all have a significant relationship to the acceptance level.

The Most Influencing Factors Related to Acceptance Level

In this multivariate step several variables that were suspected to be related to the acceptance of patients with CRF who underwent hemodialysis were analyzed including the duration of hemodialysis, spiritual level, and level of knowledge (Table 4). The results of multiple linear regression analysis show that from the three factors analyzed, indicating there are two factors that can influence the increase in acceptance, namely the spiritual level and level of knowledge. The constant value of acceptance without any contribution from other variables was 4.016. Based on beta values, the spiritual level has a beta value that was greater (0.550) than the level of knowledge (0.413), so it can be concluded that the spiritual level was more influential in increasing the acceptance level compared to the level of knowledge.

The linear regression equation obtained was: Y = Constants + a1x1 + a2x2: 4.016 + 0.442 (spiritual) + 1.459 (knowledge), if the spiritual variables and knowledge were 0 then the receipts were 4.016 and for every 1 spiritual level, acceptance will increase by 0.442 and every addition of 1 level of knowledge, the acceptance will increase by 1.459.

DISCUSSION

The respondent’s spiritual level

Based on the DSES score, the higher the DSES score obtained, the higher the spiritual level of a person. The results of this study indicate that respondents have a spiritual level score ranging from 49 to 88 and no one has a low spiritual score. High spiritual will cause respondents to feel optimistic about the existence of guidance and help from God consistently, so that respondents are not easily discouraged in living their lives with their illness. One study shows individuals who have a high level of spirituality are associated with good mental health.

The high spiritual level of respondents can be influenced by several factors such as the stage of development, age, and family role[11]. Almost one third of the respondents in this study were aged range of 46-55 years and on average were aged 52 years, which is considered in the middle stage of adult development. At the level of adult development, individual spirituality has matured[12]. In terms of faith spirituality, the more mature a person is, the more faith they possess, both in terms of knowledge, practice and experience[13]. Generally, the more mature or the older the person is, the more faith they possess. According to their education and role in life, the level of spirituality in respondents is interrelated with the level of education.

Level of knowledge of respondents

This study shows that respondents have a high level of knowledge. Knowledge of respondents can be influenced by age and level of education[14]. The maturity of age was significantly correlated with a better understanding and comprehension[15]. Moreover, age influences the development of a person’s perception and mindset[16]. An increase in a person’s age can affect the increase in knowledge.

The highest number of respondents in this study was at the level of senior high school and higher education. It can be concluded that more than 60% of the respondents have a high level of education, which is based on formal education standards in Indonesia that state the people who have graduated from high school/vocational education can be said to have a high level of education[17].

Research shows that the education level affects knowledge[14]. Generally, the higher a person’s education, the easier it will be to receive and absorb information so that more
knowledge will be held$^{18, 19}$. Patients who have a high level of knowledge will have increased knowledge which can enable patients to be able to control themselves in dealing with the problems they face, have high self-confidence, and easily understand what is suggested by health workers$^{20}$.

Another factor that can influence respondents’ knowledge is the length of undergoing hemodialysis$^{21}$. In this study more than half of the respondents had undergone hemodialysis for 12 - 60 months. This is in line with another result that shows among 20 respondents had undergone hemodialysis greetings 12-60 months (66.7%), the duration of patients undergoing hemodialysis would affect knowledge, attitudes, and dietary compliance$^{18}$. Sandra et al. explained that the longer patients undergo hemodialysis, the better their ability to think and be more critical of their disease$^{22}$.

**Acceptance of respondents**

Patient acceptance of CRF with dialysis is important in clinical settings and treatment, because active acceptance of patients with CRF tends to lead to favorable health outcomes$^{23}$. The results of this study explain that respondents have an acceptance score between 39-67. Generally, the higher the score obtained by respondents, the higher the acceptance.

Patients with high levels of acceptance will show less depression and stress than those with low levels of acceptance$^{24, 25}$. These results are reinforced by Chan’s findings which explained that active acceptance of patients with CRF can reduce the level of depression, reduce maladaptive coping, improve adaptive coping, improve quality of life and increase psychosocial adaptation$^{26}$.

Acceptance can be influenced by persistence or enthusiasm and long diagnosis$^{6, 24}$. Persistence, enthusiasm or motivation of patients who still have hope will receive and carry out care with self-confidence$^{24}$. Motivation can come from within oneself and family. During hemodialysis 67% of respondents were always accompanied by a family of husband or wife, children or parents.

Partner support in all forms of behavior and positive attitudes given to individuals who are sick or experiencing health problems can provide physical and psychological comfort$^{27}$. Family presence is considered as a provider of social support, which can reduce stress, because by interacting with others, someone can think more realistically and obtain various perspectives, so that they can better understand the problems faced$^{27}$.

Family support is one of the main external resources in coping with patients with end-stage kidney disease (ESRD)$^{28}$. Support obtained by someone in a chronic condition will speed recovery of pain, increase immunity, and can reduce stress and psychological disorders$^{29}$.

The duration of the respondent diagnosed or undergoing hemodialysis in this study was more than 12-60 months. The longer the patient undergoes hemodialysis, the more information and knowledge gained and the better attitudes and behaviors in overcoming their health problems, accepting the disease they suffer from and carrying out treatment therapy$^{10, 30}$. These results are in harmony with Ginting and Wardani (2013) who said that the longer diagnosed, patients will be increasingly able to accept and be willing to undergo predetermined procedures$^{6}$.

**Factors associated with patients with CRF undergoing hemodialysis**

Based on the results of bivariate and multivariate analysis, it can be seen that the spiritual and knowledge levels have a significant relationship with the acceptance of patients with CRF undergoing hemodialysis with p-value 0.000. Also, the spiritual level has more influence on increasing acceptance compared to the level of knowledge with a beta value of 0.550.

Acceptance means recognizing the need to adapt to chronic diseases while understanding the ability to tolerate the unpredictable and uncontrolled nature of the disease and to deal with the unpleasant consequences of the disease$^{10}$. Acceptance is influenced by several factors including: knowledge, persistence or enthusiasm possessed, means or resources$^{24}$, long diagnosed$^{6}$, and spirituality$^{4}$.

**Spiritual Level of Acceptance**

The results of the analysis show that the spiritual level has a significant relationship to the acceptance of patients with CRF who undergo hemodialysis with a p-value of 0.000 which means there is a strong and meaningful relationship. Also, based on the coefficient value and correlation strength, the spiritual level is positively correlated with acceptance and has a strong relationship with acceptance as indicated by the r value = 0.806. This result is in line with the results of El Fath’s study which showed that there is a positive relationship between spirituality and acceptance of parents who have children with autism with a p-value of 0.029 and r = 0.03332.

The spiritual level has a strong relationship with acceptance because spirituality is an inseparable part of one’s quality of life$^{31}$. Spirituality is the belief in God and is an important factor for someone in achieving and maintaining health and adapting to their illness$^{32}$.

Spirituality is something that is believed and useful as a source of support, a guide to life, affecting the level of health, and can become a significant source of strength and healing$^{6}$. Also, it is an adaptive coping strategy to deal with the challenges that occur in life$^{33}$. Young and Koopsen explained that the first dimension in spirituality is human relations with the Creator (God)$^{34}$. The spiritual coping strategy that is most often used by patients with chronic disease to cope with stress due to their illness is to get closer to God.

When a person has a chronic illness, spiritual power can help them toward healing or the development of spiritual needs and attention. The strength of one’s spirituality can be an important factor in dealing with changes caused by the disease. Spirituality plays an important role in patients with CRF in thinking and behaving$^{6}$. Spiritual care has a positive effect on reducing depression and increasing meaning in life for patients with CRF undergoing hemodialysis$^{35}$. Also,
the patients’ daily spiritual experiences have a positive relationship with feeling happy, optimistic, respecting oneself, and accepting life. In addition, the application of religion in daily life will improve the patient’s adaptability to their illness. Among Muslims, performing prayers five times a day might help the patient in accepting oneself and her or his illness patiently and steadily.

**Level of Knowledge of Acceptance**

The results of the analysis showed that the level of knowledge had a significant relationship to the reception of patients with CRF who underwent hemodialysis with a p-value of 0.000, which meant that there was a significant relationship. Based on the coefficient value and correlation strength, the level of knowledge is also positively and strongly correlated with acceptance as indicated by the value $r = 0.711$.

There is a strong relationship of knowledge with acceptance because knowledge is very important in shaping one’s actions and attitudes. Increasingly patient knowledge will affect their attitudes and behavior in overcoming their health problems and carrying out treatment therapy.

Patients who have broader knowledge can better control themselves in overcoming problems, have high self-confidence, experience, and precise estimates of how to deal with events, easily understand what is suggested by health workers, and can reduce anxiety which helps in making decisions. This is in harmony with Ginting and Wardani who said that good knowledge helps a person understand the prognosis of their illness, which can cause significant anxiety, and thus they can adapt and accept the conditions experienced.

The spiritual level has a greater influence on acceptance than the level of knowledge. This is also seen in the results of the analysis of spiritual aspects that show all aspects have a positive and strong relationship with acceptance (Table 3). The high amount of spiritual influence on acceptance occurs because spirituality is an essential part that cannot be separated from one’s quality of life and becomes an important dimension that must be considered in assessing quality of life because disturbances in spirituality will cause severe psychological disorders including suicidal ideation. Therefore, the spiritual domain is seen as important in health because it includes relationships with higher strength, respect for one’s mortality, and fostering self-actualization.

Events that occur in one’s life are often regarded as trials that God gives to humans to test the strength of their faith. Likewise, this happens with the trust of patients who believe in the existence of God. Many patients believe that their disease is a test and trial given by God. God gives disease, so God will heal it, humans can only try and pray. This belief is in accordance with the word of Allah SWT in Qs. Asyu’ara (26) verse 80 which means “And when I am sick, He heals me.”

When a disease attacks a person, then the power of spirituality plays an important role in the healing process and their spiritual needs will increase. Their spirituality can function as a buffer to the stress caused by the disease and a coping strategy to overcome it. The most commonly used spiritual coping is prayer. Praying can provide a variety of goals including coping with stressors by finding meaning and purpose in life and forming strong bonds with God.

This path of the faithful life is in accordance with the answers of Muslim patients who generally say they believe in the existence of the power of God that will heal and alleviate their suffering, when patients feel pain or other symptoms caused by their illness, patients mention Allah’s name, and pray continuously or read Al-Qur’an to ease the pain and after that the patient feels light and calm in their soul, heart and mind. This reflects God’s promise in Qs. Ar-Ra’d (13) verse 28 which explained that “Those who believe in ME, their hearts are at peace with the remembrance of Allah. Remember, only with the remembrance of Allah does the heart become peaceful.”

This research has some limitations due to the fact that the location used for research has supported spiritual guidance services for patients undergoing hemodialysis.

**CONCLUSIONS**

The spiritual level of patients with CRF who undergo hemodialysis has a median of 67, which is close to the value of 90 (maximum value) indicating higher spirituality. The level of knowledge of patients with CRF undergoing hemodialysis has a median score of 13, which approaches the value of 17 (maximum value) indicating the better level of knowledge. Admission of patients with CRF who undergo hemodialysis has a median score of 54, which is close to the value of 72 (maximum value) and indicates the more able the patient is to accept their illness. There is a significant relationship between the spiritual level and the level of knowledge with the acceptance of patients with CRF who undergo hemodialysis. The spiritual level has more influence on the reception of patients with CRF who undergo hemodialysis than the level of knowledge. Thus, it is recommended that dialysis nurses continue to improve their ability to provide spiritual nursing care to patients undergoing hemodialysis.

**Ethical Approval**

Ethical approval was obtained from the ethical committee of UNISSULA (number: 019 / A.1 / FIK-SA / I / 2019)

**Conflict of Interest**

None

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