Abstract: The purpose of this research was to investigate the relationship between perceived self-efficacy, coping behavior, and the health locus of control (HLC). Subjects were 44 junior high school students who were hospitalized for renal disease and 61 healthy students as controls. The results of the analysis were as follows:

1. There was no significant difference in self-efficacy, coping behavior, responses to stress, and HLC between students with renal disease and healthy students.

2. There was a positive correlation between self-efficacy and active coping as well as a negative correlation between self-efficacy and passive coping in the renal disease group. There was a significant positive difference in active coping between subjects with high scores and those with low scores in self-efficacy, and a significant negative difference between the two groups in passive coping.

3. A negative correlation was found between self-efficacy and response to stress (irritation and anger) in the renal disease group. A positive correlation was found between self-efficacy and response to stress (cognition and learned helplessness in the renal disease group). The ratings of stress response of subjects with high self-efficacy were significantly lower than subjects with low self-efficacy in the renal disease group.

4. A positive correlation was found between self-efficacy and HLC in the renal disease group. The HLC rating of subjects with high self-efficacy was significantly higher than those of subjects in the low self-efficacy group.

Based on these results, the effect of self-efficacy on the coping behavior and responses to stress in students with renal disease was discussed. The relationship between self-efficacy and HLC was also discussed.

Key Words: Renal disease, self-efficacy, coping behavior, responses to stress, health locus of control

I. Introduction

Students with renal disease make up 8% of those receiving education for the children with health impairments. Renal disease requires strong self-control and self-management over a long period of time. It also requires a similar regime of drug treatment such as the use of steroids and its concomitant side effects, daily living habits such as eating and exercise restrictions, and cares to prevent relapse and infection. Students with renal disease are susceptible to a variety of problems, for example, problems in school such as slow academic progress due to hospitalization, or going to hospital for treatment. They are also susceptible to psychological problems such as anxiety regarding side effects, inferiority complexes about their self-image of low height and obesity, and frustration caused by pervasive restrictions in their daily lives like eating and exercise. Therefore, medicine and education should support these students in a cooperative manner. Education for students with health impairments, in cooperation with medical staff such as physicians, includes teaching how to develop self-management ability mainly during "educational therapeutic activities,*" with the aim of obtaining an understanding of the disease and the appropriate psychological adaptation.

After students leave hospital and return to their ordinary school, however, many of them end up being re-hospitalized due to weak self-management of exercise and eating. For students with renal disease to develop self-management ability, it is necessary to provide them with appropriate guidance which is tailored to the psychological characteristics of individual students during school periods such as educational therapeutic activities.

Bandura coined the word ‘self-efficacy’ to represent the individual’s belief as to how successfully he or she can perform a course of behavior needed to produce certain results. He also named the level at which an individual becomes aware of their acquired self-efficacy as “perceived self-efficacy.” In short, perceived self-efficacy means the sense of possible accomplishment perceived by an individual before he or she initiates a certain behavior. It is a sense of expectation felt by an individual about attaining certain results. It is also a kind of confidence, which develops when an individual becomes aware of such an expectation. It is said that high self-efficacy promotes appropriate behavior for maintaining and improving an individual’s health. There are also reports that in the stress management process, high self-efficacy promotes active coping behavior and eases the responses to...
stress.\textsuperscript{6} \textsuperscript{14} Regarding the relationship between self-efficacy and HLC, it was reported that students with chronic disease who had high self-efficacy expectancy had a higher internal locus of control than those who had low self-efficacy expectancy. \textsuperscript{16}

HLC is a cognitive factor, which predicts health behavior. Rotter \textsuperscript{12} proposed a concept of “locus of control,” as a variable representing a personality that relates to how an individual recognizes the relationship between results are controlled by the behavior and reinforcement. The concept is divided; one is an internal locus of control, the idea being that results are controllable by the behavior of an individual, and the other is an external locus of control in which the environment and other people, regardless of one’s own behaviors. HLC is this concept of locus of control applied to health behavior. In other words, those with a strong internal locus of control believe that health can be attained by their own efforts while those with a strong external locus of control believe that proper health can be attained through dependence on medical care providers, or by sheer luck. That is, they feel that proper health is a consequence of their environment, or other people, independent of their own behavior. To evaluate HLC is to conduct a cognitive evaluation on whether-students with renal disease are trying to manage their lives on their own initiative or tend to depend on others. This kind of information will be important for supporting their self-management. If their HLC is rated objectively, it is possible to provide guidance to meet their cognitive characteristics attitudes toward their disease, serving as a significant source of information when providing guidance. There exist only a few studies of the relationships among self-efficacy, coping behavior, and HLC in students with chronic disease. There have been no such studies for students with renal disease.

This study investigates the circumstances of students with renal disease with the objective of supporting their self-management. Investigation was done to ascertain what kind of awareness of the disease the students had in their daily lives, what was the biggest problems they faced in their daily lives, and what kind of coping behavior they used. At the same time, we examined the effects of self-efficacy expectancy on coping behavior against the disease and the related stress, as well as its relationship with HLC.

II. Subjects and Methodology

1. Subjects

We conducted a questionnaire-based study of 44 junior high school students with renal disease (24 males and 20 females) who were receiving education at special schools for the health impaired while under hospitalization in seven hospitals, including national sanitariums, and 61 healthy students (28 males and 33 females) at ordinary public junior high schools. The study was conducted in June and July 1999. Of the 44 students with renal disease, 21 students had chronic nephritis, 13 students had nephritic syndrome, 5 students had IgA nephropathy, and 5 students had purpura nephritis. The mean/average length of hospitalization at the time of the questionnaire was 16.00 months (the standard deviation was 16.99 months). The number of students rehospitalized for relapses was 28 (63.6%).

2. Methodology

[1] Survey of the Consciousness of Renal Disease

To investigate what kind of consciousness students with renal disease have of their own disease, we adapted part of a questionnaire on kidney disease utilizing special items in the KDQOLTM (Kidney-disease-targeted measures of quality of life questionnaire). \textsuperscript{5} The items were:

1. Renal disease is a big obstacle in my life.
2. Renal disease takes up too much of my time.
3. I am irritated by renal disease.
4. I feel that I am a burden on my family.

Students were asked to select the response that best matched their feelings from the five responses “I strongly agree,” “I somewhat agree,” “I cannot say either,” “I somewhat disagree,” and “I strongly disagree.”


We asked the students with renal disease to write freely what was their biggest problem while hospitalized and how they were trying to solve that problem.


We used the self-efficacy expectancy rating system proposed by Shimada \textsuperscript{14}. That is, a general self-efficacy expectancy rating scale consisting of 12 items. Questions include, “If I try hard, I will be good at a subject I am currently weak at,” and “No matter how hard I try, I don’t think I will be able to lead the life that I wish to lead.” We asked students to choose a response from the four options available which best represented their opinion, namely, “I strongly agree,” “I somewhat agree,” “I somewhat disagree,” and “I strongly disagree.” We used Shimada’s rating scale, providing 4 points for the highest level of self-efficacy to 1 for the lowest.

We used the rating scale of coping behavior designed by Sakano, Miura, and Shimada. Coping behaviors, which individuals take against a stressor, have been noted as one of factors, which is effective in minimizing the damage caused by the stressor and lessening the response to stress. Sakano and others induced two factors, active and passive coping behaviors, from the results of factor analysis. Items such as, “to make efforts to change it,” “to make efforts to change myself,” “to find causes,” and “to come up with a countermeasure,” are listed as active coping, while items such as, “to accept it as bad luck,” and “to try not to think about it,” are listed as passive coping. The rating consists of four levels with 16 items. Following the rating method by Sakano et al., we used the four levels method (from “Do often,” to “Don’t do at all”), and gave points between 4 and 1 from the highest frequency downwards.


We used the stress response rating scale for junior high school students developed by Okayasu and others. This rating scale consists of four factors (46 items): viz. 7 items regarding irritation and anger, 19 items regarding physical responses, 8 items regarding depression and anxiety, and 12 items regarding cognition and thoughts of helplessness. Regarding their state of health and mind, we asked respondents to choose the best-fit response from, “does not apply to my case at all,” (1 point) “applies a little to my case,” (2 points) “applies well to my case,” (3 points) and “applies quite well to my case,” (4 points) using the assessment measure devised by Okayasu and others.

[6] Rating of HLC

We used the rating scale of the Health Locus of Control developed by Watanabe, with minor simplifications of Chinese characters into hiragana (Japanese phonetic syllables), so that junior high school students would not have trouble understanding the questions. Regarding health issues, we asked students to choose the response that best fitted their opinion from, “I agree,” “I agree a little,” “I disagree a little,” and “I disagree.” We allocated 4, 3, 2, and 1 point from the highest to lowest internal locus of control. Question items included, “When you get sick, do you tend to think you are responsible for causing it?” “Do you think you cannot avoid getting sick even though you try?” and “Do you think you can lead a healthy life if you take an appropriate course of action?”

III. Results

1. Investigation of consciousness of Renal Disease

Tables 1, 2, 3, and 4 presented the responses in investigation of consciousness of renal disease with four question items listed below:

1. Renal disease is a big obstacle in my life.
2. Renal disease takes up too much of my time.
3. I am irritated by renal disease.
4. I feel that I am a burden to my family.
Table 5. Biggest Stress Perceived by Students with Renal Disease

| Regarding the disease | | |
|-----------------------|------------------|
| Restrictions for eating and exercise | Taking drugs |
| Regarding hospital life | | |
| Strict observance of time | Inability to go out freely |
| Inability to do what students like to do | Living with people students don’t like |
| Regarding personal relations | (Within a limited environment of the hospital) |
| Worrying about relationships with hospital roommates and school friends | |
| Getting along with hospital staff | |
| Getting along with people students don’t like | |
| Regarding studies | |
| Getting behind the study for an entrance examination | |
| Getting behind other students in learning due to a long absence from school | |

Table 6. Coping Methods of Students with Renal Disease against Stressors

- Try to sleep well.
- Do not think about it because nothing can be done anyway.
- Try to forget everything.
- Pretend nothing is happening.
- Do not think about a problem much.
- Do not think about a problem too deeply.
- Seek advice from family members and others because I don’t know what to do.
- Avoid people and stay alone because I can’t solve it anyway.
- Let things develop how they may, but want to run away from it.
- Try to be careful as to what I say in front of people.
- Express how I feel to my friends, or family.
- Seek advice from doctors, or nurses as to how to solve the problem.
- Try to find something else good because worrying about it doesn’t help.
- Solve it by actively encouraging a discussion on my own initiative.
- Blame myself because I am responsible for it.
- Try not to exhibit my own feelings.

2. Cause of Stress and Coping Method

We asked the students to respond to a question on the biggest current problems in their lives, that is, the source of stress, and we classified into four categories the contents of freely written answers using the KJ Method, namely, “Regarding disease,” “Regarding hospital living,” “Regarding personal relations,” and “Regarding studies.” (see Table 5). At the same time, we present students’ comments on ways to solve such stressors in Table 6.

3. Relationship between Self-Efficacy and Coping Behavior as well as between Self-Efficacy and Stress Response

[1] Comparisons between Students with Renal Disease and Healthy Students

We formed two clusters of students with renal disease and healthy students and conducted a one-factor analysis of variance with points obtained from ratings of self-efficacy, coping behavior (active coping and passive coping), and stress response (irritation and anger, physical response, depression and anxiety, and cognition and thoughts of helplessness), as a dependent variable. There was no significant difference between students with renal disease and healthy students. In other words, no difference was found between students with renal disease and healthy students in terms of points obtained on ratings of self-efficacy, coping behavior, and stress response.

[2] Relationship between Self-Efficacy and Coping Behavior as well as between Self-Efficacy and Stress Response

(1) Correlation between Self-Efficacy and Coping Behavior as well as between Self-Efficacy and Stress Response

Table 7 shows a correlation between self-efficacy and coping behavior as well as between self-efficacy and stress response in students with renal disease and healthy students. In case of students with renal disease, there was a positive correlation between self-efficacy and active coping while there were negative correlations between self-efficacy and passive coping as well as between self-efficacy and stress response (irritation and anger, physical response and cognition and thoughts of helplessness).

In the case of healthy students, there was a positive correlation between self-efficacy and active coping and a negative correlation between self-efficacy and stress response (irritation and anger, physical response, cognition and thoughts of helplessness).
(2) Comparison between High and Low Self-efficacy Groups

Based upon the self-efficacy mean (36 points) of students with renal disease and healthy students, we assigned students into four groups; students with renal disease with high or low self-efficacy and healthy students with high or low self-efficacy. Those in high self-efficacy groups totaled 24 students with renal disease and 36 healthy students. Those in low self-efficacy groups numbered 20 students with renal disease and 25 healthy students. We conducted a one-factor analysis of variance using high and low self-efficacy groups separately among students with renal disease and healthy students, with two subordinate categories of coping behavior (active and passive coping) as well as four subordinate categories of stress response (irritation and anger, physical response, depression and anxiety, and cognition and thoughts of helplessness) as a dependent variable. Results are shown in Table 8.

Among students with renal disease, there was a significant difference between high vs. low self-efficacy groups in active and passive behaviors. That is, the high self-efficacy group earned significantly higher points for active coping than the low self-efficacy group while earning significantly lower points for passive coping than the low self-efficacy group. In the stress response, there was a significant difference in “cognition and thoughts of helplessness.” That is, the low self-efficacy group scored significantly higher than the high self-efficacy group in terms of “cognition and thoughts of helplessness.”

### Table 7. Pearson correlation between Self-Efficacy and Coping Behavior as well as between Self-Efficacy and Stress Response

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coping behavior</th>
<th>Stress response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Active coping</td>
<td>Passive coping</td>
</tr>
<tr>
<td>Students with renal disease Self-efficacy</td>
<td>.605**</td>
<td>-.532**</td>
</tr>
<tr>
<td>Healthy students</td>
<td>.432**</td>
<td>-.204n.s</td>
</tr>
</tbody>
</table>

* p<.05, ** p<.01

### Table 8. Mean, Standard Deviation, and F Value of Coping Behavior and Stress Response among the High and Low Self-Efficacy Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Students with renal disease</th>
<th>Healthy students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High group (N=24)</td>
<td>Low group (N=20)</td>
</tr>
<tr>
<td>Coping behavior</td>
<td>Active coping</td>
<td>Passive coping</td>
</tr>
<tr>
<td>Active coping</td>
<td>25.00 (5.78)</td>
<td>20.15 (4.40)</td>
</tr>
<tr>
<td>Passive coping</td>
<td>12.61 (3.93)</td>
<td>15.5 (3.43)</td>
</tr>
<tr>
<td>Stress response</td>
<td>Irritation &amp; anger</td>
<td>Physical response</td>
</tr>
<tr>
<td>Irritation &amp; anger</td>
<td>14.65 (5.53)</td>
<td>17.60 (6.40)</td>
</tr>
<tr>
<td>Physical response</td>
<td>34.13 (9.19)</td>
<td>36.05 (9.50)</td>
</tr>
<tr>
<td>Depression &amp; anxiety</td>
<td>14.39 (5.08)</td>
<td>15.55 (5.91)</td>
</tr>
<tr>
<td>Cognition &amp; thoughts of helplessness</td>
<td>22.39 (7.46)</td>
<td>27.65 (7.51)</td>
</tr>
</tbody>
</table>

* p<.05, ** p<.01
Among healthy students, there was a significant difference in positive coping between high and low self-efficacy groups. That is, the high self-efficacy group scored significantly higher than the low counterparts in active coping. In the stress response, there were significant differences in, “irritation and anger,” “physical response,” and “cognition and thoughts of helplessness.” That is, the low self-efficacy group scored significantly higher than the high counterparts in, “irritation and anger,” “physical response,” and “cognition and thoughts of helplessness.”

4. Relationship between Self-Efficacy and HLC

In HLC, there was no difference between students with renal disease and healthy students. Table 9 shows the correlation between self-efficacy and HLC among students with renal disease and healthy students. There was a positive correlation both among students with renal disease and healthy students.

Table 9. Pearson correlation between Self-Efficacy and Health Locus of Control

<table>
<thead>
<tr>
<th>Variable</th>
<th>Health Locus of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students with renal disease</td>
<td>.581**</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td></td>
</tr>
<tr>
<td>Healthy students</td>
<td>.585**</td>
</tr>
</tbody>
</table>

* p<.05 , ** p<.01

When the high and low self-efficacy groups are compared, the high score groups both among students with renal disease and healthy students exhibited a higher internal locus of control as shown in Table 10.

We then grouped by gender and conducted a one-factor analysis of variance with points obtained from and HLC as a dependent variable. As a result, among students with renal disease, we found either a significant difference, or a different tendency in self-efficacy (F [1,42] = 5.35, p<. 05), active coping (F [1,41] = 3.14, .05<p<. 10), and depression and anxiety (F [1,41] = 3.06, .05<p<. 10). That is, girls scored significantly higher than boys in self-efficacy and girls tended to score higher than boys in active coping. Similarly, girls tended to score higher than boys in depression and anxiety in stress response. Among healthy students, there were significant differences in self-efficacy (F [1,59] = 12.19, p<. 01), active coping (F [1,59] = 6.35, p<. 05), and HLC (F [1,59] = 6.86, p<. 05). Girls scored significantly higher than boys in self-efficacy, active coping, and internal locus of control.

We also analyzed the relationships between hospitalization length and scores obtained from ratings of self-efficacy, coping behavior, stress response, and HLC, but no correlations were found.

IV. Discussion

1. Opinions on Renal Disease

Disease diagnosed by a physician refers to a biological state, or an objective state where there is damage in the whole, or a part of the living body as well as in physical or mental function. Twaddle 18, however, states that an illness is something a person recognizes subjectively with three symptoms. First sensuous changes that some serious pain or fatigue is occurring, second, an inability to perform ordinary actions, and finally, major physical changes and symptoms which can influence future activities. That is, the judgment criterion for “an illness,” is not only symptoms, but also the level of influence of a disease over ordinary life. When we examined the survey results from this perspective, in three question items omitting the item, “I am irritated by renal disease,” we found 60 to 70% of the students have self-awareness that they have an ‘illness’ and experience various restrictions in daily life subjectively (Tables 1, 2, 3, and 4). Thus, it is important for education personnel dealing with catering to the needs of the health impaired, as well as medical staff, to understand what students are going through and provide emotional and practical support. Education personnel for the health impaired in particular need to support students. This includes using activities such as educational therapeutic activities so that they can understand their illness and treatment, as well as the

<table>
<thead>
<tr>
<th>Variable</th>
<th>Health Locus of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students with renal disease</td>
<td>42.29</td>
</tr>
<tr>
<td>(N=24)</td>
<td>36.70</td>
</tr>
<tr>
<td>Fvalue</td>
<td>8.50**</td>
</tr>
<tr>
<td>(5.16)</td>
<td>(7.51)</td>
</tr>
</tbody>
</table>

| Healthy students          | 44.39                   |
| (N=36)                    | 36.24                   |
| Fvalue                    | 42.94**                 |
| (4.27)                    | (4.75)                  |

* p<.05 , ** p<.01
required life style and develop a self-management ability to establish desirable life habits in order to get along with their own “illness” in daily living.

2. The Biggest Problem in Daily Life and Coping Method

We classified the causes of stress into four categories: Those regarding, (1) disease, (2) hospital life, (3) personal relations, and (4) school studies. There were many comments particularly regarding hospital living and personal relations.

We classified the free response comments on how to cope with stress using the eight coping factors proposed by Aldwin and Revenson 1) as follows:

A. Escape from Reality
   - Sleep well.
   - Avoid people and stay alone because of the inability to solve problems.
   - Let things develop how they may, but run away from the results.

B. Cautious Behavior
   - Try to be careful as to what to say in front of people.

C. Taking an Action toward a Solution
   - Solve problems by actively encouraging discussions on my own initiative

D. Minimization of a Problem
   - Do not think about a problem too deeply.
   - Do not think about a problem much.
   - Try not to exhibit my own feelings.
   - Try to forget everything.

E. Mobilization of Support
   - Express how I feel to my friends or family.
   - Seek advice from doctors or nurses as to how to solve a problem.

F. Self-Criticism
   - Blame myself because I am responsible.

G. Negotiation
   - Try to find something else good to think about because worrying about (the problem) doesn’t help.

H. Search for Meaning
   - There were no applicable comments.

Among the eight coping factors, “minimization of a problem,” “escape from reality,” and “negotiation,” received most comments. These can be categorized as responses relating to so-called passive coping. It is thought that disease, hospitalization, and personal relations in an isolated hospital environment are perceived as difficult problems for students to solve by themselves.

In this study, there were no comments regarding, “a search for meaning,” such as, “I tried to find a new conviction or an important fact,” or “tried to rediscover the meaning of life.”

3. Comparisons between Students with Renal Disease and Healthy Students

There were no significant differences in self-efficacy, coping behavior, stress response, and HLC between students with renal disease and healthy students.

In a study comparing students with renal disease and healthy students, Nakamura and others 8) found that students with renal disease received significantly higher stress scores than healthy students on three stress items, namely, “I was forced to quit what I started to do,” “I had to do things I didn’t like or I disliked,” and “I didn’t understand what was happening around me.” Nakamura and others, however, did not find a significant difference in these the items, “I had too many things to do,” “I couldn’t do what I really wanted to do,” “I was troubled about my outlook (face and figure),” “I was troubled with my grades in school,” “I couldn’t get along with a teacher in school,” and “I get into a quarrel with my parents more frequently.” Regarding the three stress items with significantly high scores, Nakamura and others emphasized the possibility that students were stressed by restrictions in daily life caused by their disease, treatment and examination schedule, and that they were not well-informed about their disease and treatment. Even among healthy students, stress such as worrying about outlook and school grades are high stress items at similar levels to students with renal disease. We believe that no significant difference was found between the two student groups because this study did not include question items on daily life restrictions caused by disease. Stress ratings of students with renal disease whose daily regime includes daily restrictions related to the disease needs to be developed in the future. At the same time, ratings of self-efficacy and coping behavior should be made more suitable to patients with renal disease. Finally, it is necessary to understand the recognizable characteristics of students with renal disease more accurately.

4. Relationships between Self-Efficacy and Coping Behavior as well as between Self-efficacy and Stress Response

Coping behavior refers to attempts to solve, prevent, or avoid a certain problematic situation. Therefore, coping behavior implies efforts to eliminate, or minimize the influence of a stressor by actively taking countermeasures. In the case of a disease perceived by a patient that is not easily resolved, the patient often does
Self-Efficacy, Coping Behavior, and the Health Locus of Control

not necessarily use active coping behavior, but rather takes passive coping behavior. Coping behaviors which students with renal disease wrote about in their free style comments included many different descriptions of passive coping such as escape from reality and minimization of a problem. Coping behavior is repeated until influence of a stressor is lessened or disappears.

This study found that relationships between self-efficacy and coping behavior and between self-efficacy and response to stress among students with renal disease exist, and that self-efficacy has influence over coping behaviors (active coping and passive coping). Those with high self-efficacy tended to handle the causes of stress in a more active manner and not to use passive methods. They also tended to have low response to stress toward, “cognition and thoughts of helplessness.”

Among healthy students, we found relationships between self-efficacy and coping behavior as well as between self-efficacy and response to stress, and that self-efficacy influences coping behavior (active coping). Those with high self-efficacy tended to handle causes of stress in a more active manner, and to have low response to stress toward the three subordinate categories, “irritation and anger,” “physical response,” and “cognition and thoughts of helplessness.”

Among students with renal disease, however, even those with high self-efficacy who cope actively against a stressor were not found to lessen their response to stress of “irritation and anger,” and “physical response,” unlike healthy students.

From these results, we can conclude that active coping by students does not necessarily lead to lessening of the response to stress on, “irritation and anger,” and physical response.” This was especially true in response to stressors, which were all difficult to resolve by the students themselves such as disease, hospitalization, or personal relationships in an isolated environment. Nomura 10 presented the stress evaluation model shown in Chart 1 and concluded that coping behavior and social support are important in minimizing stress.

When a stressor such as a disease or hospitalization is serious and cannot be avoided, there are cases where social support rather than coping behavior plays a larger role in lessening stress response. Takeda 15 investigated the relationship between response to stress and perceived social support to the support source such as families, friends, and hospital staff. He found a relationship among the four responses to stress. For example, the higher the support expectation from a mother, siblings, friends, and hospital staff was, a decrease in the stress response of, “irritation and anger,” resulted. At the same time, the higher the support expectation for hospital staff, the less a stress response of, “physical response,” resulted.

5. Relationship between Self-Efficacy and HLC

We found a positive correlation between self-efficacy and HLC both among students with renal disease and healthy students. Similarly, in both groups, the high self-efficacy group was found to have a tendency toward a strong inner locus of control in comparison with their lower self-efficacy counterparts. This supports research findings by Takeda and Hara. 16 Those with a strong inner locus of control have a strong awareness that their health is a result of their own effort. They exhibited active, independent self-care behavior toward their own health. In contrast, those with a strong external locus of control sought an external manager such as medical staff, drugs, or tended to rely on sheer luck. They also tended not to undertake independent self-care behavior and to depend on medical staff, or family members.

Therefore, those with a high inner health locus of control can improve their self-management skills so that medical and education staff around students in hospital should cater to teaching the students the knowledge and skills for self-management while at the same time respecting their independence to maintain their own health. 21 In contrast, for those with a strong external locus of control, support from people around them such as families and medical staff is important. Junior high school students are still in the middle of growing up and in some cases, they may have to live with renal disease throughout their long lives. It is crucial for them to raise their inner health locus of control as well as self-
management skills during this period of development. As Ueda 19) states, a high self-management ability means a higher quality of life (QOL) at several different levels; First, life in terms of existence level, second, living at an individual level, third, lifetime at a social level, and finally, leading to quality of life as experience from a subjective perspective.

According to Bandura 2), self-efficacy is not something, which develops naturally. It is improved through information in four areas, that is, accomplishment of targeted behaviors, substitute experience, oral persuasion, and biological and emotional states. Accomplishment of targeted behaviors as information to raise self-efficacy means accumulation of successful experiences in which action is taken and tasks are accomplished by oneself. Bandura 2(35) states that the accomplishment of targeted behaviors is information that can increase self-efficacy most. Substitute experience means to learn a problem solving method through listening to the successful experiences of people in the same circumstances and with the same goals. Oral persuasion means to be praised or evaluated by people with expert knowledge or charm. Biological and emotional states mean to become aware of biologically and mentally favorable responses raised when a goal is accomplished. Bandura 2) states it is important to integrate the above mentioned four information sources (“integration of efficacy information”).

We also grouped students in this study by category of renal disease (chronic nephritis, nephritic syndrome, IgA nephropathy, and purpura nephritis) and conducted a one-factor analysis of variance with data obtained from self-efficacy, coping behavior, stress response, and HLC as a dependent variable. There was, however, no significant difference. Takeda and Hara 16), however, found that depending upon disease type, the HLC level differs. For example, students with obesity scored significantly higher than students with asthma in inner locus of control. It is obvious that disease type may influence HLC because some diseases are controllable more easily than others. Yet, despite our prediction that HLC was higher among those with nephritic syndrome who tend to have more efficacious convalescence than students with chronic nephritis, we did not find a significant difference between them. This is because students with nephritic syndrome still have to follow eating and exercise restrictions and individual differences exist in how the disease will evolve in the future. Also this study unfortunately had only a few subjects in most renal disease categories (13 with nephritic syndrome, 5 with IgA nephropathy, and 5 with purpura nephritis), so therefore, we need to continue the study to obtain valid results.

We believe we need to conduct a study on relationships between the convalescence of renal disease and HLC, between disease condition and self-efficacy, and between disease condition and HLC. At this point of time, self-efficacy ratings for cancer and diabetic patients 17(22) as well as HLC for asthma patients 4) have been developed, but there are almost none have been developed for children. In addition, no rating system has been developed for patients for renal disease. We would like to continue this study to develop a self-efficacy rating and HLC for children with renal disease and to provide guidance, which meets their cognitive characteristics.

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References


Footnotes
* Educational therapeutic activities; provide "educational therapeutic activities" for the children to improve and overcome their activities limitation (disabilities).

**Self-efficacy: As defined by Bandura (1977), self-efficacy expectancy is the individual's belief that he or she can successfully perform a course of behavior in a given situation. Individuals with weak self-efficacy beliefs would be expected to coping efforts, whereas individuals with strong self-efficacy would persist in the face of obstacle.