Type A behavior pattern shortens length of stay in comprehensive rehabilitation units

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Abstract. [Purpose] The aim of this study was to describe the importance of patient-related factors in rehabilitation. We focused on the type A behavior pattern. If individuals with the type A behavior pattern have better compliance, they would have a shorter length of hospital stay than those with non-type A behavior. We compared the length of stay of patients with the type A behavior pattern with that of patients with a non-type A behavior pattern. [Subjects and Methods] Fifty-seven patients staying in a comprehensive rehabilitation unit participated in this study. Type A behavior pattern, length of stay, and Barthel Index were assessed. We use the Student's t-test to examine the statistical differences in length of stay and Barthel Index at discharge between subjects with type A behavior and those without type A behavior. [Results] Age and Barthel Index at discharge were not significantly different between the two groups. However, length of stay was significantly higher in the non-type A group compared with the type A group. [Conclusion] Patients with the type A behavior pattern had a shorter length of hospital stay than patients with a non-type A behavior pattern. In conclusion, our results suggest that the type A behavior pattern shortens the length of hospital stay. Those data show that we should consider the patient's characteristics in rehabilitation to protect the patient and for financial benefit.
Key words: Length of stay, Type A behavior pattern, Patient-related factors

INTRODUCTION

The financial cost of health care has increased year after year in Japan[1]. The Ministry of Health, Labour and Welfare of Japan has recommended shortening of the length of hospital stays[1]. In general, shortening the length of stay contributes to a reduction in the physical and mental stress of patients and rapidly returns them to their jobs and communities. Actually, in a previous study, it was shown that a shorter length of stay resulted in not only a financial benefit but also a patient benefit[2]. The patient's benefit is spending less time out of their home and reduction of the possibility of contracting nosocomial infections during a stay in the hospital[2]. In stroke patients, stroke-related impairment, medical complications, family support, and discharge destination predict the length of stay[3]. In another previous study, impairment, activities of daily living (ADL), unplanned discharges, and discharge to facilities affected the length of stay[4]. On the other hand, patient psychological factors are predictive of rehabilitation outcomes[5]. Similarly, patient-related factors were found to affect rehabilitation outcome, whereas illness- and intervention-related factors did not[6].

The type A behavior pattern is a human psychological characteristic. This behavior pattern includes impatience, urgency, aggressiveness, and particularity about details. The type A behavior pattern is regarded as an independent risk factor of cardiovascular diseases[7]. However, patients with type A behavior pattern characteristics may have better compliance with rehabilitation and other forms of medical and social support than those with non-type A behavior. If patients with the type A behavior pattern have better compliance, they would have a shorter length of hospital stay than those with non-type A behavior. To examine this hypothesis, in this study, we compared the length of stay of patients with the type A behavior pattern with that of patients with a non-type A behavior pattern. We hypothesized that length of stay of patients with the type A behavior pattern would be shorter than that of patients with a non-type A behavior pattern.

SUBJECTS AND METHODS

Fifty-seven patients participated in this study. All patients had stayed in the comprehensive rehabilitation unit of Omaezaki Municipal Hospital between April and December 2013. The exclusion criteria were as follows: transfer to another hospital, medical facility, or welfare facility during the research term and refusal to provide informed consent. All subjects provided informed consent for participation in this study. Ethical approval was obtained from the Ethics

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Type A behavior pattern was assessed by an abbreviated set of 12 questions developed by Maeda[8]. The subjects were asked to answer all questions. Each question had three responses. The responses "always", "occasionally", and "hardly" were scored as 2, 1, and 0 points, respectively, for nine questions, and the points were doubled for three questions. A total score of 17 or greater was defined as type A, and the other subjects were defined as Non-type A. After the subjects were discharged, we counted the number of days between admission and discharge to evaluate the length of stay. To evaluate the ability to perform ADL at discharge, we measured Barthel Index for all patients. We used the Student's t-test to examine statistical differences in length of stay and Barthel Index at discharge between subjects with type A behavior and those without type A behavior. Values were considered to be significantly different when $p < 0.05$. We analyzed these measurements by Statistical Package for Social Sciences (SPSS) version 19.

RESULTS

The measurements of two subjects were excluded because their data were incomplete. Ultimately, 55 subjects (75.3±11.7 years old, 18 males and 37 females) were classified into either the type A group (n = 26) or the non-type A group (n = 29), as shown in Table 1. The characteristics of Subjects (sex and cause of admission) were similar in the two groups. Age was not significantly different between the two groups. Also, the Barthel Index at discharge was not significantly different between the two groups. However, length of stay was significantly higher in the non-type A group compared with the type A group ($p < 0.05$) (Table 2).

DISCUSSION

Our results support the hypothesis that patients with the type A behavior pattern have better compliance with forms of medical support than patients with a non-type A behavior pattern. Patients with the type A behavior pattern had a shorter length of hospital stay than patients with a non-type A behavior pattern.

Length of hospital stay can be affected by multiple factors, including medical complication, family support, discharge destination[3], impairment, ADL[4], and rehabilitation[9]. Patient-related factors[5], especially psychological factors[6], affect rehabilitation outcomes. The subjects in this study were patients who stayed in a comprehensive rehabilitation unit. Patients who stay in a comprehensive rehabilitation unit do not require much medical care and are able to focus on rehabilitation. Hence, our data suggest that psychological factors of the patients, such as type A behavior, affect rehabilitation compliance. Length of stay, ability to perform ADL at discharge, and patient age influence rehabilitation outcome and whether patients can return home or not[10, 11]. Only patients who could return home were included in our study. There was no significant difference in Barthel index or patient age between patients with the type A behavior pattern and those with a non-type A behavior pattern. Thus, it appears likely that ability to perform ADL

Table 1. Characteristics of the type A and non-type A behavior patterns

Characteristics	Type A group	Non-type A group
Patients (n)	26	29
Male (n)	10	8
Female (n)	16	21
Cause of admission		
Stroke (n)	8	10
Fractures (n)	13	10
Disuse syndrome (n)	2	3
Others (n)	3	6

Values represent number of subjects.
Others causes of admission include spinal code injury, spinal canal stenosis, and total knee arthroplasty.

Table 2. Difference in length of stay between the type A group and non-type A groups

Characteristics	Type A group	Non-type A group
Age (years)	77.2	71.4
Discharge BI	97.58	97.08
Length of stay (days)	66.2	87.4*

* $p < 0.05$ vs. type A group, Values represent averages.
Student t-test; BI: Barthel Index

at discharge, patient age, and destination at discharge do not influence length of stay.

The type A behavior pattern includes impatience, urgency, aggressiveness, and particularity about details. Patients who have higher levels of physical activity during rehabilitation were associated with a shorter length of stay[12]. Because patients with the type A behavior pattern might have good compliance with rehabilitation and increase their physical activity, they might be able to shorten the length of stay. The type A behavior pattern is well known to be an independent risk factor of cardiovascular diseases[7]. Also in the Japanese, the type A behavior pattern is associated with an increased risk of acute myocardial infarction, especially in women[13]. So, the type A behavior pattern may be considered not a good characteristics in general. In contrast, another article reported that the type A behavior pattern reduced the risk of coronary heart diseases in Japanese men[14]. Japanese men who do not express their anger may have an increased risk of high blood pressure[15]. This previous article indicates that non-type A Japanese men may have a higher hypertension risk than type A Japanese men. In the Japanese, the type A behavior pattern may have to be considered a good characteristics. Our results also show that patients with the type A behavior pattern may be able to return home early.

This study has some limitations. First of all, the patients were discharged for various reasons. Hence, the length of stay was affected by multiple factors. Second, behavior pattern is one of a human psychological characteristic. This study investigated only one a part of psychological characteristic. Finally, the cause of a short length of stay may not

be rehabilitation compliance.

In conclusion, our results suggest that the type A behavior pattern shortens the length of hospital stay. The data show that we should consider the patient's characteristics in rehabilitation to protect the patient and for financial benefit.

REFERENCES

1) Ministry of Health, Labour and Welfare Japan: Health and Medical Serves. Annual Health, Labour and Welfare Report 2012–2013, 2013, 26–99.

2) Duffy JR: Nosocomial infections: important acute care nursing-sensitive outcomes indicators. AACN Clin Issues, 2002, 13: 358–366. [Medline] [CrossRef]

3) Wee JY, Hopman WM: Stroke impairment predictors of discharge function, length of stay, and discharge destination in stroke rehabilitation. Am J Phys Med Rehabil, 2005, 84: 604–612. [Medline] [CrossRef]

4) Saxena SK, Ng TP, Yong D, et al.: Total direct cost, length of hospital stay, institutional discharges and their determinants from rehabilitation settings in stroke patients. Acta Neurol Scand, 2006, 114: 307–314. [Medline] [CrossRef]

5) Everhart JS, Best TM, Flanigan DC: Psychological predictors of anterior cruciate ligament reconstruction outcomes: a systematic review. Knee Surg Sports Traumatol Arthrosc, 2013, 1–11. [Medline]

6) Rosti-Otajärvi E, Mäntynen A, Koivisto K, et al.: Patient-related factors may affect the outcome of neuropsychological rehabilitation in multiple sclerosis. J Neurol Sci, 2013, 334: 106–111. [Medline] [CrossRef]

7) Rosenman RH, Brand RJ, Sholtz RI, et al.: Multivariate prediction of coronary heart disease during 8.5 year follow-up in the Western Collaborative Group Study. Am J Cardiol, 1976, 37: 903–910. [Medline] [CrossRef]

8) Maeda S: Application of a brief questionnaire for the behavior pattern survey. Type A, 1991, 2: 33–40.

9) Brusco NK, Shields N, Taylor NF, et al.: A Saturday physiotherapy service may decrease length of stay in patients undergoing rehabilitation in hospital: a randomised controlled trial. Aust J Physiother, 2007, 53: 75–81. [Medline] [CrossRef]

10) Sakurai H, Tsujimura T, Sugiura Y, et al.: Determinants of return to home after stroke: an analysis based on FIM scores. J Phys Ther Sci, 2011, 23: 283–287.

11) Okuno Y, Miyasaka T, Dobashi K: Factors influencing the outcome of acute rehabilitation: functional independence measure assessment at discharge. J Phys Ther Sci, 2012, 24: 491–494.

12) Peiris CL, Taylor NF, Shields N: Patients receiving inpatient rehabilitation for lower limb orthopaedic conditions do much less physical activity than recommended in guidelines for healthy older adults: an observational study. J Physiother, 2013, 59: 39–44. [Medline] [CrossRef]

13) Yoshimasu K, Fukuoka Heart Study Group: Relation of type A behavior pattern and job-related psychosocial factors to nonfatal myocardial infarction: a case-control study of Japanese male workers and women. Psychosom Med, 2001, 63: 797–804. [Medline] [CrossRef]

14) Ikeda A, Iso H, Kawachi I, et al. JPHC Study Group: Type A behaviour and risk of coronary heart disease: the JPHC Study. Int J Epidemiol, 2008, 37: 1395–1405. [Medline] [CrossRef]

15) Ohira T, Iso H, Tanigawa T, et al.: The relation of anger expression with blood pressure levels and hypertension in rural and urban Japanese communities. J Hypertens, 2002, 20: 21–27. [Medline] [CrossRef]