RELATION BETWEEN TYPUS MELANCHOLICUS AND MEDICAL ACCIDENT IN JAPANESE NURSES

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Abstract: The purpose of this study is to examine the relation between the melancholic type of personality (in German, Typus Melancholicus; TM), burnout, and medical accidents among Japanese nurses. This study was carried out with female Japanese nurses in 2007. Valid data was collected from 701 respondents. Average of participants’ ages was 27.5 (SD=6.6) years old. The questionnaire was composed of Kasahara’s Typus Melancholicus Scale (KS), Maslach’s Burnout Inventory (MBI), and frequency of medical incidents and accidents. As the results, the burnout-medical accident process showed variations according to the personality features based on TM. Moreover, it became clear that TM influences the burnout-medical accident process, rather than the frequency of medical accidents and degree of burnout.

1. INTRODUCTION

In recent years, psychological stress has been regarded as one of the individual factors related to medical accidents (Kitaoka-Higashiguchi, 2005). However, there has been no elaborate research which has verified the relation between psychological stress and medical accidents. In this study, we examined the possible relation between personality, psychological stress, and medical accidents.

As one of the personality concepts related to psychological stress and medical accidents, we focused on the melancholic type of personality (in German, Typus Melancholicus; TM). TM has been advocated by Tellenbach (1961) and it is well known as one of the premorbid personality traits of depression. From recent study, it is becoming clear that some personality groups based on TM have different psychological stress processes. Yamada et al. (2006, 2007a, 2007b) elucidated two main factors from TM features and showed the effect of two factors on the perception of stressors and adoption of stress coping. Namely, TM provides a useful personality concept to understand the stress process.

In this study, we also focused on burnout syndrome (burnout) as one of the psychological stress factors that relates to medical accidents. Certainly, burnout is a serious psychological stress factor which can be frequently observed in nurses and it has also been well studied in the nursing profession. Furthermore, some empirical studies have reported meaningful relations between burnout and medical accidents (Kitaoka-Higashiguchi, 2005).

Figure 1 is a verification model which includes the three concepts of TM, burnout, and medical accident which were established for the present study. In this model, the concept of medical accident was divided into the two correlated phenomena of incident and accident because between the two we can observe many personal and occupational interventions for risk management. This model shows the difference of the levels of TM related to the degree of burnout, frequency of medical incident and accident, and the interactions which exist between burnout and medical incidents and accidents.

It is certain that we should pay much attention to environmental factors and should not attribute every occurrence of burnout, medical incident and accident solely to the individual’s personality or mental...
condition. So, although this model doesn’t include environmental factors, we should always consider the
results of study in relation to environmental factors.
Anyway we believe that examination of this model will support the development of more elaborate
mechanisms for understanding medical accidents from the individual aspect. If TM’s effect on the
burnout-medical accident process is proved, we can argue for the necessity of the risk management approach
toward both aspects of environmental factors and individual factors. Furthermore, we can also argue that
stress management programs based on the TM are meaningful for risk management.

Figure 1. Verification model of this study

2. METHODS

2.1 Participants

Participants were Japanese female nurses from one university hospital. This research carried out in
2007. Valid data were 701. Their mean age was 27.5 (SD=6.6). This study was approved by the ethical
committee of the university hospital system. Nurses participated in this investigation after informed consent
was obtained.

2.2 Measures

The questionnaire was composed of Kasahara’s Typus Melancholicus Scale (KS, Kasahara, 1984),
Maslach’s burnout inventory (Maslach & Jackson, 1981), and questions about frequency of medical incidents
and accidents.

2.3 Statistical analysis

The analysis of this study was carried out using the statistics software SPSS10.5. Analysis was
performed by 5 steps according to the verification model. Firstly, this study examined the factor structure of
TM using factor analysis. Secondly, direct relation between TM and frequency of medical accident was
examined using a two-way ANOVA. Similarly, direct relation between TM and burnout was also examined.
Thirdly, relation between burnout and medical accidents in some personality groups based on TM was
examined. Finally, this study examined the relation between accidents and incidents.

3. RESULTS

3.1 Factor analysis of TM scale

In order to examine the factor structure of KS, a factor analysis was conducted using promax rotation
(principal factor method) for all items. The result of this analysis is shown in Table 1. As the results, two
factors exhibited eigen values of greater than 1.0 in the initial extraction of factors. Two items (Q12&Q13)
were excluded from the two factor structure of KS because these items showed low factor loadings (<.30). Moreover, internal consistencies of both factors were high (α>.73). Accordingly, we judged that two factor structures were best for KS. The two factors were found to have characteristics which we named “sthenic” and “asthenic” traits, based on Kretschmer’s personality concept.

Table 1. Factor analysis of KS

<table>
<thead>
<tr>
<th>TM factors</th>
<th>Items</th>
<th>Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sthenic (α=.73)</td>
<td>2 When I start something, I always finish it thoroughly.</td>
<td>0.67 -0.08</td>
</tr>
<tr>
<td></td>
<td>3 I have a strong sense of responsibility.</td>
<td>0.63 -0.02</td>
</tr>
<tr>
<td></td>
<td>15 I am neat.</td>
<td>0.60 -0.08</td>
</tr>
<tr>
<td></td>
<td>14 I like to arrange my belongings.</td>
<td>0.57 -0.06</td>
</tr>
<tr>
<td></td>
<td>4 I give importance to my social duty.</td>
<td>0.47 0.13</td>
</tr>
<tr>
<td></td>
<td>1 I like to work.</td>
<td>0.43 -0.09</td>
</tr>
<tr>
<td></td>
<td>13 I am rather cheerful.</td>
<td>0.27 0.03</td>
</tr>
<tr>
<td></td>
<td>12 I sometimes get excited easily.</td>
<td>0.18 0.02</td>
</tr>
<tr>
<td>Asthenic (α=.74)</td>
<td>7 I am rather timid.</td>
<td>-0.21 0.67</td>
</tr>
<tr>
<td></td>
<td>6 I would rather avoid confrontation with somebody.</td>
<td>-0.06 0.59</td>
</tr>
<tr>
<td></td>
<td>8 I am nervous about what other people think of me.</td>
<td>-0.02 0.57</td>
</tr>
<tr>
<td></td>
<td>11 I do not like to be conspicuous.</td>
<td>-0.13 0.52</td>
</tr>
<tr>
<td></td>
<td>10 I would not do something extreme.</td>
<td>0.13 0.52</td>
</tr>
<tr>
<td></td>
<td>5 I cannot say no, when someone asks me to do something.</td>
<td>0.26 0.46</td>
</tr>
<tr>
<td></td>
<td>9 I give importance to common sense.</td>
<td>0.39 0.41</td>
</tr>
</tbody>
</table>

Eigen value (Initial value) 3.22 2.52
Percent of variance 16.96 12.42

3.2 Verifying the relation between TM and medical accidents using two-way ANOVA

In order to verify the relation between TM and medical accidents, a 2 (level of Sthenic) × 2 (level of Asthenic) ANOVA was conducted regarding frequency of incidents and accidents. As the results, there was no relation between TM factors and incidents. On the other hand, an interaction was confirmed in the relation between TM factors and accidents (F=.05, p<.05). Therefore, we categorized four types of TM group: TM, Sthenic (lack of Asthenic), Asthenic (lack of Sthenic) and anti-TM, based on the scores of TM factors, and carried out one-way ANOVA regarding frequency of accidents. In this analysis, significant differences were confirmed among four personality groups (Sthenic < Asthenic< TM< Anti-TM, F=3.48, p<.05). Especially, multiple comparison indicated that frequency of accidents in the TM group and the anti-TM one were higher than in the Sthenic one (p<.05).

3.3 Verifying the relation between TM and burnout using a two-way ANOVA

In order to verify the relation between TM and burnout, a 2 (level of Sthenic) × 2 (level of Asthenic) ANOVA was conducted regarding MBI scores. As the result, meaningful relation was not confirmed in the relation between TM factors and MBI score of depersonalization. On the other hand, some interactions were confirmed in the relation between TM factors and other MBI scores (emotional exhaustion: F=7.11, p<.01; lack of personal accomplishment: F=6.59; p<.05; total score of MBI: F=8.90, p<.001). Then, we compared these MBI scores among the four personality groups using one-way ANOVA. In this analysis, significant differences were confirmed among four personality groups (emotional exhaustion: F=6.15, p<.001; lack of personal accomplishment: F=13.72; p<.001; total score of MBI: F=11.06, p<.001). Especially, multiple comparison indicated that frequency of the asthenic group was higher than those of the other personality groups in these MBI scores (p<.05).

3.4 Correlations between burnout and medical accidents in four personality groups
In order to examine the relation between burnout and frequency of medical incident and accident, correlation analysis was carried out. The results of this analysis are shown in Table 2. In the Anti-TM group, lack of personal accomplishment showed significantly positive correlation to accidents. In the asthenic group, every MBI score except the lack of personal accomplishment showed significantly positive correlation to accidents. In the sthenic group, every MBI score showed significantly positive correlation to incidents. In the TM group, significant correlation was confirmed between depersonalization and accident.

### Table 2. Correlations between burnout and frequency of medical incidents and accidents

<table>
<thead>
<tr>
<th>Personality groups</th>
<th>Emotional exhaustion</th>
<th>Depersonalization</th>
<th>Lack of personal accomplishment</th>
<th>Total score of MBI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-TM Incident</td>
<td>0.12</td>
<td>0.12</td>
<td>0.16 *</td>
<td>0.16 *</td>
</tr>
<tr>
<td>Accident</td>
<td>0.15</td>
<td>0.12</td>
<td>0.20 **</td>
<td>0.19 *</td>
</tr>
<tr>
<td>Asthenic Incident</td>
<td>0.00</td>
<td>0.03</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Accident</td>
<td>0.20 *</td>
<td>0.24 *</td>
<td>0.08</td>
<td>0.20 *</td>
</tr>
<tr>
<td>Sthenic Incident</td>
<td>0.25 **</td>
<td>0.20 *</td>
<td>0.36 ***</td>
<td>0.37 ***</td>
</tr>
<tr>
<td>Accident</td>
<td>0.03</td>
<td>0.02</td>
<td>0.16</td>
<td>0.09</td>
</tr>
<tr>
<td>TM Incident</td>
<td>0.06</td>
<td>0.06</td>
<td>0.13</td>
<td>0.11</td>
</tr>
<tr>
<td>Accident</td>
<td>0.08</td>
<td>0.20 *</td>
<td>0.09</td>
<td>0.14</td>
</tr>
</tbody>
</table>

(*p<.05, **p<.01, ***p<.001)

### 3.5 Correlations between frequency of incidents and accidents

In order to examine the relation between incidents and accidents in the four personality groups, correlation analysis was carried out. As the result, significantly positive correlations were confirmed in the anti-TM group ($r=.55$, $p<.001$) and the TM one ($r=.31$, $p<.001$). On the other hand, low correlation coefficients were confirmed in the asthenic group ($r=.17$) and the sthenic one ($r<.18$, $p<.05$).

### 4. DISCUSSION

#### 4.1 Medical accident features in the anti-TM group

The anti-TM group did not show higher burnout scores when compared to other groups. However, the result of this study showed a possibility that they may easily have accidents if they have suffered from lack of accomplishment, even though we could not obtain a significantly high correlation between these two phenomena. This suggests that intervention regarding lack of accomplishment may be one of the meaningful methods for preventing their medical accidents. We could also find another problem from the results. A comparatively high correlation between frequency of incident and accident was shown. This result indicated that they may not have had useful support from other medical staffs when their medical incidents became conspicuous in the working place. Those who were in the anti-TM group lack the tendency of perfection in their work and lack particular concern for their boss and coworkers. It may be difficult for their boss and coworkers to prevent those workers from having an accident, particularly when they become so tired that they may have an incident. Namely, it can be thought that their incidents intimately connect to accidents because of low support from other people.

#### 4.2 Medical features process in the asthenic group

In the results of the asthenic group, comparatively high burnout scores were confirmed in four personality groups. Furthermore, emotional exhaustion and depersonalization of burnout was related to medical accident. Therefore, for this group, prevention of their burnout may be more effective for prevention of accidents, compared with other personality groups. On the other hand, it seems strange that the frequency of incidents and accidents was comparatively low in the four groups. This may be explained by their personality features and the low correlation between incidents and accidents. Asthenic traits include the concern for others, devotion to others, lack of self-assertion, and so on. When those nurses suffered from
burnout, some of them retired before they had incidents or accidents. If they had an incident, they tended to be well cared for by other people because they were always concerned for others. Their bosses or coworkers easily find their difficult situation and support them at early stage. We believe that the low relation between incidents and accidents was fostered by such conditions.

4.3 Medical accident features in the sthenic group

The sthenic group did not show higher burnout scores when compared to other groups. In this group, all burnout scores were related to incident, however, meaningful relation was not confirmed between burnout and accidents. These results indicated that burnout may not lead sthenic nurses to have accidents, but to have incidents. This may be explained by their personality features. Sthenic nurses like working and always try to do their work perfectly. If such active people suffer from burnout, their bosses and coworkers will notice their negative condition immediately. As the result, medical accidents caused by burnout will be prevented by other people at the early stage. Their results of low correlation between incidents and accidents and low frequency of medical accidents may also be explained by the same feature.

4.4 Medical accident features in the TM group

The TM group did not show higher burnout scores when compared to other groups. However, in this group, depersonalization of burnout was related to accidents. This indicates that, although TM nurses don’t experience burnout easily, some management is necessary for the prevention of medical accidents when they experience depersonalization.

Another feature of the results of the TM group was that meaningful correlation was confirmed between accidents and incidents. Furthermore, the frequency of medical accidents was comparatively high. These results are similar to those of the anti-TM group. However, considering that the TM group’s personality features were opposite to those of the anti-TM group, we will be able to find different reasons in these results. According to conventional studies, TM may be regarded as one of the positive personality traits for the nursing profession because TM nurses are hard workers who try to perform their work perfectly for others (Yamada, 2007b). Therefore, their bosses or coworkers may regard them as being such reliable and dependable workers that they need no risk management. Even if TM nurses happen to have medical incidents, people around them tend to believe that they are able to take care themselves and they may fail to notice their difficult conditions. As the result, TM nurses’ incidents may be related directly to accidents, which may increase the frequency of accidents.

5. CONCLUSIONS AND FEATURE RESEARCH

This study showed that the burnout-medical accident process is varied according to the personality features which are based on TM. Moreover, it clarified that TM influences a burnout-medical accident process to a greater extent than the frequency of medical accidents and degree of burnout. Therefore, it is said that developing stress management programs based on the TM concept is meaningful in contributing to risk management. In addition, the task of unifying environmental factors and individual factors will be necessary from now on.

6. REFERENCES


