

## Clinical Errors Committed By New Graduate Nurses with Developmental Disorder Tendencies in Japan

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ARTICLE INFO	ABSTRACT
<p><b>Article type:</b> Brief Report</p>	<p>The present nationwide survey was carried on new graduate nurses in Japan who were identified with difficulties in acquiring occupational skills in their first year of employment by their nursing managers. The characteristics of the nurses in their first year of employment, reported by their direct supervisors, were assessed to identify developmental disorder tendencies (DDT). The errors committed during the first year of employment were compared between the nurses with and without DDT. The level of incident aftermath, developed by the National University Hospital Council of Japan, was used for comparison. The nurses with DDT committed higher levels of clinical errors, compared to those without DDT; however, mild levels of sequential injuries were reported. The results of this study indicated that support provided to such nurses may be insufficient. Support programs particularly focusing on DDT may reduce the clinical errors committed by new graduate nurses. Additionally, the determination of specific tendencies contributing to clinical errors is warranted.</p>
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### Introduction

Human factors play pivotal roles in patient safety. Minimal clinical experience, feeling unskilled, occupational stressors, sleep disturbance, depression, and burnout have been identified as relevant, but not always consistent factors associated with clinical errors (1-3).

Recently, difficulty with left-right discrimination, which is associated with dyslexia, has been regarded as a clinical error (4). The present nationwide survey was carried out on the levels of clinical errors of new graduate nurses with and without developmental disorder tendencies (DDT) in Japan.

### Materials and Methods

This is a secondary report of a previously published study (5). In brief, a nationwide survey was conducted on 500 randomly selected hospitals with  $\geq 300$  beds in Japan. The nursing managers directly supervising new graduate nurses were asked to complete a questionnaire regarding the nurses who found it difficult to acquire occupational skills.

The questionnaire comprised a modified battery to assess nurses' DDT and levels of clinical errors during the first year of employment. It also measured tendencies related to learning disabilities (LD), attention-deficit/ hyperactivity disorder

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(ADHD), and autism spectrum disorder (ASD), collectively called developmental disorders. The LD was subdivided into six categories, namely listening, speaking, writing, reading, mathematics, and reasoning, each of which comprised of 5 Likert-type items with responses ranging from 0 (not at all) to 4 (frequently); 12 points or higher indicated tendency toward a category. The ADHD was subdivided into hyperactivity/impulsivity and inattentiveness. Each part consisted of 9 Likert-type items with responses ranging from 0 (not at all/seldom) to 3 (quite often). Scores of 0 and 1 were converted to 0 and scores of 2 and 3 to 1; 6 points or higher showed the tendency toward hyperactivity/impulsivity or inattentiveness. The ASD comprised of 27 Likert-type items with responses ranging from 0 to 2; 22 points or higher indicated a tendency toward social interaction/restricted interest (6). Cronbach's alpha

coefficient for each category in this sample was within the range of 0.773 (reasoning) to 0.975 (social interaction/restricted interest) (5). Validity was not calculated as this sample population had not been medically diagnosed. However, a nurse with a high score for social interaction/restricted interest was previously diagnosed with Asperger's syndrome, according to the participant's comment. The nursing managers were asked to report the highest level of errors based on the level of incident aftermath using a scale developed by the National University Hospital Council of Japan (7). This scale categorizes clinical errors into eight levels according to their seriousness. Table 1 tabulates each level of the aforementioned scale.

#### *Ethical considerations*

This study was approved by the Research Ethics Committee of Yamanashi College of Nursing (approval no.: 20).

**Table 1:** Highest level of clinical errors committed in the first year of employment

Level	Permanency of injury	Degree of injury	Description of injury	Without developmental disorder tendencies (n=37)	With developmental disorder tendencies (n=66)
5	Mortality		Mortality (except death as the consequence of primary illness)	0	0
4b	Permanent	Moderate to severe	Permanent sequela with significant functional disabilities or visual problems	0	0
4a	Permanent	Mild to moderate	Permanent sequela without significant functional disabilities or visual problems	0	0
3b	Transient	Severe	Need for intense procedure or treatment (e.g., vigorous change in vital signs, artificial ventilation, surgery, extended hospital stays, admission of outpatient, and fracture)	1	4
3a	Transient	Moderate	Need for simple procedure or treatment (e.g., applied disinfectants, applied anti-inflammatory plaster, suture, and administered analgesics)	2	10
2	Transient	Mild	No procedure or treatment required (e.g., increased vigilance, mild change in vital signs, and lab test/examination)	11	30
1	No injury		No harm to the patient (possibility of some effects on the patient)	11	15
0			Error existence but not committed on the patient	9	5
			Unwritten	3	2

## Results

In total, 2,761 nurses working in 131 hospitals since April 2012 were selected for this survey. The behaviors and clinical errors of 103 nurses were reported by their nursing managers. In addition, 66 nurses had DDT based on the criteria proposed by the Ministry of Education, Culture, Sports, Science, and Technology of Japan (6). None of the nurses committed clinical errors greater than level 4a, which can cause permanent sequelae or patient mortality (Table 1). The distribution of the severity of clinical errors between the nurses with DDT and those facing difficulties in acquiring working skills but without DDT was significantly different. The nurses with DDT were prone to committing errors greater than level 2 ( $P=0.01$ ; Fisher's exact test). A higher number of the nurses with DDT committed errors that caused injuries to patients than the nurses without DDT; however, mild levels of sequential injuries were reported.

## Discussion

In this study, significant differences were observed between the levels of clinical errors committed by the nurses with and without DDT. Although no existing study has examined the relationship between DDT and clinical errors, the present investigation can be discussed in the context of reports of higher occurrences of work-related injuries among young individuals with dyslexia (8). The results of previous and current studies imply that individuals with disabilities are not adequately supported at their workplaces.

Japan and many other countries ratify the laws related to an inclusive society, such as the Law on the Promotion of the Elimination of Discrimination due to Disabilities (Japan), Americans with Disability Act (United States), and Accessible Canada Act (Canada). The United Kingdom's Royal College of Nursing issued a guidebook on supporting nurses with LD affirming that early recognition and assessment are crucial for individualized support and providing various examples of ways to support these nurses (9). Based on the results of the current study and the above-mentioned

guidebook, it is recommended that preceptors or supervisors identify nurses with DDT and help them acquire coping skills against clinical errors. Additionally, certain traits (e.g., left-right discrimination) contributing to clinical errors should be clarified in future studies to develop strategies for prevention.

The current study had several limitations. Firstly, it relied on the nursing administrators' memory, especially for the nurses who had left their occupation. Secondly, the nurses in the control group were not a general population of new graduate nurses. They were identified as having difficulties in acquiring occupational skills by nursing administrators. More rigorously designed studies are warranted to verify the findings of the present study.

## Conclusion

New graduate nurses with DDT were more prone to commit clinical errors. The early detection of such tendencies and adequate support may help reduce such errors.

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