

Characteristics of self-reported daily life note (LN) users in return-to-work judgment for workers on sick leave due to mental health conditions, and usefulness of the tool

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Abstract: A self-reported daily life note (LN) is an effective tool used by occupational physicians to assess the capacity of workers on sick leave due to mental illness to return to work (RTW). We aimed to clarify whether there were differences in the criteria used to define recovery for RTW between LN users and non-users, whether LN users were satisfied with LN, and whether non-users wanted to use LN. In total, 363 occupational physicians (238 LN users, 125 non-users) completed self-reported questionnaires covering demographic and occupational variables, and RTW assessment criteria. We investigated which of the 10 assessment criteria were considered most important for RTW. The proportion of LN users was higher among women, younger physicians, and occupational physicians with more working days per month. LN users emphasized four criteria in assessing RTW: 1) constant wake-up time, 2) constant bedtime, 3) no midnight waking, and 4) no feeling of drowsiness during the day. LN users regard regular sleep rhythm and the absence of drowsiness during the day as important criteria for RTW. Ninety-seven percent of users regarded LN as useful. Seventy-four percent of non-users had interest in using LN.

Key words: Self-reported daily life note, Mental health, Return to work, Work capacity evaluation, Recurrence

Introduction

In Japan, workers who return to work (RTW) after sick

leave due to mental illness have a high chance of relapse and recurrent sick leave. For example, in the three years after RTW from sick leave for psychiatric illness, 32.4% of workers took sick leave again¹⁾. In addition, about half of workers who RTW following leave for depression require recurrent sick leave²⁾. Studies in many countries have reported a large number of absences from work within one year after RTW^{3, 4)}.

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In Japan, government guidelines have been developed for workplaces and OPs regarding the assessment of RTW following leave for mental health problems⁵⁾. These guidelines indicate that psychiatrists should assess whether or not a worker's symptoms have sufficiently improved to allow RTW, and that OPs should assess whether or not RTW is appropriate from the perspective of the workplace. In addition to the guidelines, van der Feltz-Cornelis *et al.*⁶⁾ and Muto *et al.*⁷⁾ also reported the importance of collaboration between OPs and psychiatrists. However, Anema *et al.*⁸⁾ reported that collaboration between OP and general physicians was limited. Further, OPs are not often psychiatrists, and some therefore choose not to make decisions about whether workers on leave should RTW, but instead follow a psychiatrist's recommendation. In addition, there are cases in which the double checks recommended in the guidelines are not effective⁹⁾. The lack of a standardized RTW assessment method makes it difficult for OPs to determine whether or not an individual's work ability has recovered sufficiently to allow RTW. Therefore, a simple tool that allows OPs to properly judge RTW is required.

In studies of recurrent depression, sleep disturbance has been reported as a factor of recurrence from a clinical point of view^{10, 11)}, while Emens *et al.*¹²⁾ reported that the severity of depression correlated with circadian misalignment. It is therefore important that sleep is taken properly and that a regular sleeping rhythm is established before RTW. Goracci *et al.*¹³⁾ reported that a healthy lifestyle intervention program (including exercise, eating habits, sleep hygiene and smoking cessation) proved to be efficacious in preventing relapse.

One way of determining whether workers on sick leave have a healthy lifestyle during sick leave is the self-reported daily life note (LN). LN is a written table that allows workers to describe the contents of their daily activities over one week. Some OPs and psychiatrists use Life Note (LN) to assess RTW. Kajiki¹⁴⁾ gathered 10 LN formats used in the occupational health field and 5 formats used in the psychiatric field. Some LN formats included a description of whether or not the medicine was orally administered, while others included a statement on mood and symptoms. Kajiki¹⁴⁾ extracted common elements from the collected formats. Figure 1 shows a representative LN which is a table that workers use to describe the contents of their daily activities over one week. Some psychiatrists ask workers on sick leave to complete LN to inform judgments about whether their symptoms have improved sufficiently to allow RTW¹⁵⁾. Some OPs also use LN to assess work ability, sometimes in conjunction with assessments

from the worker's psychiatrist¹⁶⁾. Namba¹⁷⁾ developed an RTW program that included LN, under which the one-year relapse-free job retention rate increased from 54.2% to 91.6%. This program included the use of LN in combination with planning for RTW in reasonable steps over six months, monthly interviews with an OP, and an RTW meeting with an occupational health specialist. Although the improvement in the relapse-free job retention rate in this case was not solely due to the use of LN, it is likely that LN helped to ensure a successful RTW.

From the clinical point of view, sleep disturbance has been reported as a factor in recurrence^{10, 11)}, and depression severity has been found to correlate with circadian misalignment¹²⁾. From an occupational health point of view, Namba¹⁷⁾ considered regular sleeping rhythm to be the most important criterion in RTW assessment. OP can grasp sleep rhythm by LN. LN can also be used to determine how much exercise was done, which Goracci *et al.*¹³⁾ states is to a healthy life as important as sleep hygiene. Although we expected that the use of an LN would greatly help OPs when they evaluate RTW, we did not know to what extent OPs regarded LN as important. The aims of this study were to (1) confirm whether LN users and non-users differed in the criteria they use to determine the "recovery" of workers and their ability to RTW, (2) determine whether LN users were satisfied with LN or not, and (3) investigate why LN non-users did not use LN and whether LN non-users wanted to use LN. By checking these 3 points, we aimed to confirm whether LN is a suitable tool in RTW judgment for sick leave workers due to mental health diseases.

Subjects and Methods

Participants

From November to December 2015, we distributed a self-reported questionnaire survey by postal mail to OPs who were members of the Expert Community of Occupational Health Physicians of the Japan Society for Occupational Health. This society is the largest academic organization of occupational medicine in Japan and the members of its expert community of occupational health physicians are professionals, including full-time OPs, part-time OPs whose specialty is occupational medicine, and occupational medicine researchers working as part-time OPs⁷⁾.

Demographic and occupational variables

Demographic information collected included sex,

Period: DD/MM/YYYY~DD/MM/YYYY

Name: _____

Sample								
	O/Δ(■)	/ ()	/ ()	/ ()	/ ()	/ ()	/ ()	
0:00								
1:00								
2:00	sleep							
3:00								
4:00								
5:00	wake-up							
6:00	breakfast							
7:00								
8:00	train							
9:00	library							
10:00								
11:00								
12:00	lunch							
13:00	exercise							
14:00	(sports)							
15:00								
16:00	shopping							
17:00								
18:00	domestic chores							
19:00	dinner							
20:00								
21:00	go to bed							
22:00	sleep							
23:00								
Remarks	I felt refreshed after waking up. I concentrated on reading in the library. Appetite was OK.							

Fig. 1. Example of life note format.

age, LN user or non-user (checked by showing Fig. 1 to participants), clinical specialty (whether the respondent was a psychiatrist/psychosomatic doctor or not), years of experience as a doctor, years of experience as an OP, number of working days as an OP per month, experience with RTW interviews with workers with mental disorders, and years of interview experience with people with mental disorders. The last question was added with the possibility that years of experience as a doctor and years of interview experience with people with mental disorders might differ, because some OPs might have avoided workers with mental health diseases from the time they became OPs.

Evaluation of RTW criteria

Guidelines⁵⁾ recommend eight criteria for RTW assessment: showing sufficient motivation for RTW, being able to commute safely alone, ability to work continuously during work hours, ability to perform work activities (e.g., reading, computer work, mild exercise), recovery from fatigue due to work by the next day, ability to sleep regularly, no feeling of drowsiness during the day, and recovery of attention and concentration necessary for work. Sleep disturbance was reported as a factor in recurrence^{10, 11)}, and depression severity correlated with

circadian misalignment¹²⁾. Namba¹⁷⁾ claimed that a regular sleep rhythm was more important than any other criterion. Considering these studies, we subdivided “being able to sleep regularly” into: “constant wake-up time,” “constant bedtime,” and “no midnight waking.”

We therefore used 10 criteria to explore the factors that OPs prioritized in RTW assessments: 1) constant wake-up time; 2) constant bedtime; 3) no midnight waking; 4) no feeling of drowsiness during the day; 5) showing sufficient motivation for RTW; 6) ability to commute safely alone during commuting times; 7) ability to work continuously during work hours; 8) ability to perform work activities (e.g., reading, computer work, mild exercise); 9) recovery from fatigue due to work by the next day; and 10) recovery of attention and concentration necessary for work. Respondents were asked which criteria they emphasized in their assessment of RTW. Multiple responses were possible.

Evaluation of LN

We asked LN users how useful LN was as a tool of RTW judgment in terms of not useful at all, not very useful, neither, useful, or very useful. We also asked LN non-users why they did not use LN (I don't know LN, I know

Table 1. Characteristic differences between Life Note users and non-users among Ops

Characteristic	Users (n=238)		Non-users (n=125)	
	n	%	n	%
Sex				
Men	156	60	103	40
Women	81	79	22	21
Missing	1			
Age (yr)				
24–39	59	80	15	20
40–59	146	66	75	34
60+	33	49	35	51
Clinical specialist				
Yes	22	69	10	31
No	213	66	112	34
Missing	3		3	
	Mean	SD	Mean	SD
Years of experience as a doctor	23	11	28	12
Years of experience as an occupational physician	14	9	15	11
Working days as an occupational physician per month	13	7	9	7
Years of interview experience with people with mental disorders	11	8	11	9

SD: standard deviation.

Clinical specialist: whether respondent was a psychiatrist/psychosomatic doctor or not.

LN but I don't know how to use it, I know LN but it is inconvenient, other), and asked whether or not they want to use LN with guidelines on how to judge RTW using LN.

Data analysis

All data were collected by anonymous self-administered questionnaires. Responses from participants who conducted RTW interviews with workers with mental disorders were analyzed. Each RTW criterion was compared between LN users and non-users using Pearson's chi-squared test. To compare the characteristics of LN users and non-users, we performed multivariable logistic analyses to analyze independent associations with RTW assessment criteria. We adjusted for sex, age, clinical specialty, number of working days as an OP per month, and years of interview experience with workers with mental disorders. All multivariable models were evaluated at a 95% significance level ($p < 0.05$). All data analyses were performed using IBM SPSS Statistics 20.0 software (SPSS, Inc., Chicago, IL, USA).

Ethics approval

This survey was conducted with approval from the Ethics Committee of the University of Occupational and Environmental Health, and the OPs Subcommittee of the

Japan Society for Occupational Health (H27-168). All data obtained were anonymized participant data.

Results

Participants

Completed questionnaires were received from 413 OPs (32% response rate). Fifty OPs were excluded from this survey because they did not have experience with RTW interviews with workers with mental disorders. Of the remaining OPs, 363 respondents had conducted RTW interviews with workers with mental disorders, of whom 238 (66%) used LN and 125 (34%) did not.

Table 1 showed that 79% of female physicians and 60% of male physicians used LN. In addition, LN was used by 80% of physicians aged in their 20's and 30's, about 70% of physicians in their 40's and 50's, and approximately half of physicians aged over 60 yr. Comparison of LN users (n=238) and non-users (n=125) showed that the proportion of women and younger physicians was higher among LN users. There was no association between LN use/non-use and clinical specialty. LN users had fewer years of experience as a doctor. However, there was no association between years of experience as an OP and LN use/non-use. LN users and non-users had a similar number of years of interview experience with workers with mental

Table 2. Use of the 10 return to work criteria among Life Note users and non-users

Return to work assessment items	Users (n=238)		Non-users (n=125)		<i>p</i> *
	n	%	n	%	
1. Constant wake-up time	227	95	95	76	<0.001
2. Constant bedtime	187	79	72	58	<0.001
3. No midnight waking	169	71	59	47	<0.001
4. No feeling of drowsiness during the day	193	81	80	64	<0.001
5. Showing sufficient motivation for RTW	225	95	113	90	0.139
6. Being able to commute safely alone during commuting times	208	87	103	82	0.197
7. Being able to work continuously during work hours	222	93	111	89	0.141
8. Being able to perform work activities	173	73	89	71	0.764
9. Recovery from fatigue due to work by the next day	163	68	69	55	0.012
10. Recovery of attention and concentration necessary for work	187	79	90	72	0.162

**p* values are derived from the χ^2 test.

health disorders; however, LN users reported more working days as an OP per month.

Evaluation of RTW criteria

Table 2 shows the results of Pearson's χ^2 tests for each RTW criterion for LN users and non-users. Five criteria were associated with the use of LN: 1) constant wake-up time; 2) constant bedtime; 3) no midnight waking; 4) no feeling of drowsiness during the day; and 9) recovery from fatigue due to work by the next day. Regardless of whether or not LN was used, more than 90% of physicians emphasized the importance of the criterion "showing sufficient motivation for RTW".

Table 3 shows the results of multivariate logistic regression analysis using LN use as the independent variable and the 10 RTW criteria as dependent variables. Four criteria were associated with the use of LN in both crude and adjusted models: 1) constant wake-up time (adjusted odds ratio [OR]=5.4); 2) constant bedtime (adjusted OR=2.3); 3) no midnight waking (adjusted OR=2.1); and 4) no feeling of drowsiness during the day (adjusted OR=2.2). "Recovering from fatigue due to work by the next day" (criterion 9) was associated with the use of LN in the crude model, but the effect of LN use disappeared after adjustment.

Evaluation of LN

Ninety-seven percent of LN users were satisfied with LN (33% regarded LN as useful, and 64% regarded LN as very useful). Thirty-four percent of non-users did not use LN because they were unaware of LN, and 9% were aware of LN but did not know how to use it. Further, 15% of non-users felt that LN was inconvenient. In contrast, 74% of LN non-users wanted to use LN with guidelines on how

it should be used to judge RTW (Tables 4–6).

Discussion

Difference between LN users and non-users

LN use was higher among women and younger physicians. LN users reported more working days as an OP per month than non-users. Tsugawa *et al.*¹⁸⁾ reported that within the same hospital, patients treated by older physicians had higher mortality than patients cared for by younger physicians. Tsugawa referred to the possibility that physicians further from training are less likely to adhere to evidence-based guidelines, might use newly proved treatments less often, and might more often rely on clinical evidence that is not up to date. In our study, older physicians might use LN less often just like Tsugawa *et al.*'s research. Rotor and Hall¹⁹⁾ reported female physicians spend more time during a typical visit talking with their patients than do male physicians. During this time, they engage in communication that more broadly relates to the larger life context of the patient's condition. The reason why LN use was higher among woman was considered that they regarded LN as a useful item for communication with workers before RTW. The more working days that doctors worked as an OP, the more likely they were to use LN. This appeared to be attributable to the fact that they have many RTW interviews to conduct and might therefore have constructed a system to confirm LN before each RTW interview.

Both LN users and non-users emphasized criterion 5 (showing sufficient motivation for RTW) in decisions regarding RTW. Four criteria emphasized by OPs in RTW assessments were associated with the use of LN in

Table 3. Evaluation of the 10 return to work criteria

Return to work assessment items		Crude model		Adjusted model*	
		OR	95%CI	OR	95%CI
1. Constant wake-up time	Non-users	reference		reference	
	Users	6.5	3.1–13.5	5.4	2.3–12.3
2. Constant bedtime	Non-users	reference		reference	
	Users	2.7	1.7–4.3	2.3	1.4–3.8
3. No midnight waking	Non-users	reference		reference	
	Users	2.7	1.7–4.3	2.1	1.3–3.5
4. No feeling of drowsiness during the day	Non-users	reference		reference	
	Users	2.4	1.5–3.9	2.2	1.3–3.8
5. Showing sufficient motivation for RTW	Non-users	reference		reference	
	Users	1.8	0.8–4.2	1.5	0.6–3.9
6. Ability to commute safely alone during commuting times	Non-users	reference		reference	
	Users	1.5	0.8–2.7	1.4	0.7–2.9
7. Ability to work continuously during work hours	Non-users	reference		reference	
	Users	1.8	0.8–3.7	1.9	0.8–4.4
8. Ability to perform work activities	Non-users	reference		reference	
	Users	1.1	0.7–1.7	0.8	0.5–1.4
9. Recovery from fatigue due to work by the next day	Non-users	reference		reference	
	Users	1.8	1.1–2.8	1.6	0.9–2.6
10. Recovery of attention and concentration necessary for work	Non-users	reference		reference	
	Users	1.4	0.9–2.3	1.2	0.7–2.2

OR: odds ratio; CI: confidence interval.

*Adjusted for gender, age, clinical specialty, number of working days as an occupational physician per month, years of interview experience with people with mental disorders.

Table 4. Evaluation against user's LN

	Users (n=238)	
	n	%
1. not useful at all	0	0
2. not useful	1	0
3. neither	4	2
4. useful	78	33
5. very useful	153	64

Table 5. Reason why non-users did not use LN

	non-Users (n=125)	
	n	%
1. I don't know LN	43	34
2. I know of LN but don't know how to use LN	11	9
3. I know LN but it is inconvenient to use	19	15
4. others	36	29
missing	16	13

Table 6. Whether non-user wants to use LN or not

	non-Users (n=125)	
	n	%
1. yes	93	74
2. no	30	24
missing	2	2

both crude and adjusted models (constant wake-up time, constant bedtime, no midnight waking, and no feeling of drowsiness during the day). The criterion “recovery from fatigue due to work by the next day” was only associated

with the use of LN in the crude model. In contrast, the effect of LN use disappeared after adjustment. This suggests that OPs may assess a person's ability to recover from fatigue using other methods (such as experience-based interviews) as well as information from LN.

LN allows users to gather information on patients' daily activities and sleep rhythm (e.g., waking and sleep time). Individuals can also use LN to record the good behaviors reported by Goracci *et al.*¹³⁾ as part of a healthy lifestyle, and bad behaviors such as drowsiness and the need to lie down or sleep during the day. OPs can use this information to help decide whether a worker can or should RTW. In this study, LN users confirmed the importance of factors

such as regular sleep rhythm and the absence of drowsiness during the day in RTW assessments. Our results reflect those of previous studies. In terms of both clinical and occupational health^{10–13, 17)}, regular sleep rhythm is an important way to avoid exacerbating symptoms of depression.

In this survey, we found that non-users did not place greater emphasis on regular sleep rhythm than users. Given that sleep rhythm was a predictor of recurrence, it is possible that workers were permitted to RTW by non-users in a situation where the sleep state of workers had not sufficiently improved.

Usefulness of LN in RTW judgment

The difficulty of evaluating work ability has been recognized in Japan and internationally^{20, 21)}. While Morgell *et al.*²²⁾ successfully used the International Classification of Functioning, Disability and Health (ICF)²³⁾ to evaluate work disability, Anner *et al.* concluded that the comprehensive descriptions of work disability in the ICF were limited²⁴⁾. Nevertheless, the ICF concept of “activity” is useful for OPs who need to assess work ability before RTW. The ICF divides “activity” into “performance” and “capacity.” The “performance” qualifier describes what an individual does in his or her current environment. “Performance” can also be understood as involvement in a life situation or the lived experience in the actual context of a person’s life. Therefore, “performance” describes the execution of real-life daily tasks, and may reflect the outcomes of LN; hence, LN can be used to confirm a worker’s “performance.” The ICF “capacity” qualifier describes an individual’s ability to execute a task or action, and identifies a person’s highest probable level of functioning in a given domain at a given moment. “Capacity” can be considered an evaluation of work ability before RTW. An OP’s role is to evaluate “capacity” to ensure a successful RTW.

The need for LN as a suitable tool in RTW judgment

Ninety-seven percent of LN users were satisfied with LN, and 74% of LN non-users wanted to use LN with guidelines on how it should be used to judge RTW. One difficulty with assessing RTW is in the ability to appropriately evaluate such as sleeping situation and activities during the day, just by looking at LN without special training. Mori²⁵⁾ reported that OPs could be classified into three categories in Japan: doctors who spend part of their working time on occupational health activities (“non-specialist OPs”); doctors who engage in occupational health activities

full-time (“specialist OPs”); and doctors who manage corporation-wide occupational health programs or lead programs at occupational health service institutes (“lead OPs”). In this survey, we found that older, male, non-specialist OPs who more frequently did not use LN. LN is considered to be particularly useful for non-specialist OPs who do not have sufficient time for occupational health activities, because LN facilitates understanding of the patient’s daily life.

Of note, LN is not a versatile tool. In particular, several specific characteristics warrant close evaluation. Since LN is self-reported, it is possible that a worker may make a false report to obtain an earlier RTW, such as describing a regular wake-up time despite not actually waking up at that time. LN should be considered as simply a tool for RTW judgment, but not to be used exclusively for this judgment. OPs should instead interview sick-leave workers while confirming LN and check for the presence of inconsistencies between the information obtained from LN and that from the interview, such as in facial expressions and speed of conversational responses. This requirement should be included in guidelines on how to judge RTW using LN.

Limitations

This study has several limitations. First, it was conducted under a cross-sectional design, which means causal associations could not be determined. Second, respondents might have provided socially desirable opinions. Third, it is possible that participation was largely restricted to OPs who are highly motivated to support RTW of patients with mental illness. Fourth, participation was limited to OPs who were members of the Expert Community of Occupational Health Physicians of the Japan Society for Occupational Health. We did not examine responses among the entire population of OPs. In particular, we did not collect data from doctors who spend part of their working time on occupational health activities (i.e. non-specialist OPs²⁵⁾). Despite this limitation, in this study it turned out that LN non-users did not place emphasis on regular sleep rhythm, which was important for relapse prevention, in RTW determination. We confirmed that LN plays an important role as a tool in RTW judgment for workers on sick leave due to mental health conditions. Additional information on the “performance” of a worker on sick leave would improve the ability of OPs to evaluate work ability (capacity), and may lead to a more successful RTW. Since LN users placed greater emphasis on sleep rhythms than non-users, users are considered to be cautious with respect

to permission for RTW. LN users are expected to have less recurrence after RTW than non-users. Future research should examine the differences in relapse or recurrent sick leave rates between workers evaluated by LN users and non-users.

Conclusion

Our results showed that the proportion of LN users was higher among women, younger physicians, and those who worked more days as an OP per month. Both LN users and non-users placed emphasis on a worker showing sufficient motivation for RTW. LN users regarded regular sleep rhythm and the absence of drowsiness during the day as important criteria for RTW assessment. Ninety-seven percent of LN users were satisfied with LN, and 74% of non-users were interested in using LN in RTW judgment. LN is considered to have a role as a tool in RTW judgment for workers on sick leave due to mental health conditions.

Authors' Contribution

A.K. and S.K. designed the research for this study, collected information from previous studies, conducted the statistical analysis, and wrote the manuscript. Y.F. advised on data collection, and conducted the statistical analysis. K.N. advised on the design of this study and was consulted on the questionnaire items. T.N. and M.N. contributed to the interpretation of the results. A.T. and K.M. supervised and provided advice about the study. All authors read and approved the final manuscript.

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