Return-to-work in Japanese Occupational Health Settings: A Systematic Review and Recommendations

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Return-to-work in Japanese Occupational Health Settings: A Systematic Review and Recommendations

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Background: Evidence-based return-to-work (RTW) guidelines are lacking in Japan. Here, we investigated whether workplace interventions would shorten the sick-leave period.

Methods: A literature search using six occupational health review questions (OHRQs) was conducted in January 2016, and randomized controlled trials were selected. A meta-analysis was conducted for OHRQs 1 and 2 and a qualitative systematic review for OHRQs 3 and 4. Recommendations were subsequently made after thoroughly considering their feasibility in Japan.

Results: A committee formed by the Kanto Branch of the Japan Society for Occupational Health agreed on four recommendations for employees concerning sick-leave due to musculoskeletal and mental health disorders.

Conclusion: Conditional recommendations included that RTW programs (OHRQ1) and collaboration between occupational health and clinical staff (OHRQ2) shorten the length of sick-leave due to musculoskeletal and mental health disorders. Work accommodation (OHRQ4) was also conditionally recommended for musculoskeletal disorders. Social support was also a good practice approach despite insufficient evidence.

Key Words: evidence-based medicine, systematic review, return-to-work (RTW), Return-to-work Guidelines in Occupational Health 2017 Japan, sick-leave

Introduction

Although guidelines for improving workers' mental health were introduced in 2006 in Japan,[1] interventional studies in Japanese occupational health settings are insufficient for developing evidence-based guidelines. Given

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Table 1 The search strategies for each OHRQ using PubMed (from 1946 to present day).

Number	Search strategies	Results
OHRQ1	*Does an RTW Program (e.g., re-work) at the workplace improve work-related outcomes in relation to RTW in workers on sick-leave?*	
	(sick-leave OR sick-absence OR work-disability) AND (vocational-rehabilitation OR cognitive-behavior-therapy OR mindfulness-program OR workplace-intervention) AND ((random* [Title/Abstract] OR clinical trials) OR health-care-quality))	639
OHRQ2	*Do occupational health activities for workers on sick-leave combined with clinical medicine improve work-related outcomes in relation to RTW?*	
	(general practitioner OR family physician OR primary care physician) AND (record OR fit-note OR performance OR clinical OR job OR sick-leave OR sick absence OR sickness absence OR return to work AND certificate OR consultation) AND (work disability OR employee)	416
OHRQ3	*Does social support for workers on sick-leave improve work-related outcomes in relation to RTW?*	
	(sick-leave OR sick-absence OR disability) AND (social-support OR family OR workplace) AND ((random* [Title/Abstract] OR clinical-trial OR health-care-quality) AND return-to-work)	290
OHRQ4	*Does work accommodation at the time of RTW for workers on sick-leave improve work-related outcomes in relation to RTW?*	
	(sick-leave OR sick-absence OR disability) AND (partial-return-to-work OR full-RTW OR modified-work OR workplace-accommodation) AND ((random* [Title/Abstract]) OR clinical-trail OR health-care-quality)	612
Future research questions	*What are the appropriate periods for sick-leave due to various diseases?*	-
	What are the appropriate criteria to judge the RTW readiness for sick-leave due to various diseases?	-

there are examples of such evidence-based guidelines, including the UK National Institute for Health and Care Excellence guidelines,[2] the American Medical Association guidelines,[3] and the Cochrane Review,[4] return-to-work (RTW) guidelines were clearly necessary in Japan. RTW for mental health disorder is positively carried out and evidence is gathering in the Japanese occupational health settings these decades, but both support and evidence for the other various disease, for example, musculoskeletal disorder or caner, are insufficient. Moreover, there has been increasing emphasis on avoiding prolonged periods of sick-leave or layoff because of illness, considering the burden for both the workplaces and individuals concerned and society in general. Therefore, the Medical Information Network Distribution Service (MINDS), overseen by the Japan Council for Quality Health Care (responsible to the Ministry of Health, Labour and Welfare), helped evaluate the quality of health-related evidence for occupational health, using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach,[5] to produce clinical practice guidelines. "Return-to-work guidelines 2017" were the first evidence-based guidelines to be published concerning Japanese occupational health settings using the GRADE approach, published online at both MINDS and Kanto Branch of the Japan Society for Occupational Health (JOH Kanto) websites in Japanese.[6,7]

In Japan, the Industrial Safety and Health Act require companies with more than 50 employees to have at least a part-time occupational physician, while those with more than 1,000 employees a full-time one.[8] These new guidelines target workers and health professionals, while a committee formed by the JOH Kanto to determine relevant evidence-based occupational health guidelines considered only workplace-related interventions for mental, musculoskeletal, and other disorders, based on a systematic review of current epidemiological studies. Optimal strategies for RTW and decision-making on work readiness were not equal in terms of each workplace's occupational health system, size, and duty load. Although this study included various kinds of workplace interventions, these RTW programs are not identical to "re-work," which is the conventional Japanese approach where participants gather in an office environment in a medical institution or specialized public facility during sick-leave.[9] Importantly, when using these recommendations, occupational health professionals should engage with the workers to assess risks after 4 weeks of sick-leave and whether some workplace interventions would be useful for employees during sick-leave.

Materials and Methods

The JOH Kanto formed a multidisciplinary guideline de-

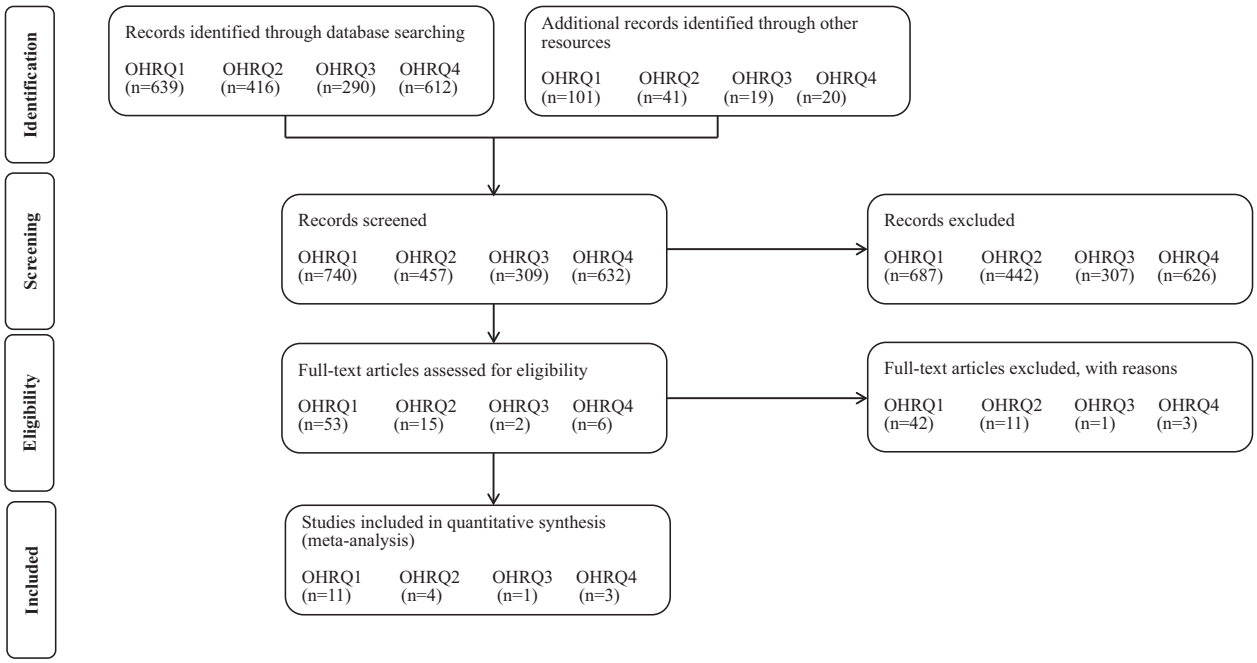

Figure 1 PRISMA flowchart.
PRISMA, preferred reporting items for systematic reviews and meta-analyses; OHRQ, occupational health review question.

velopment committee to minimize potential bias and consider conflicts of interest. The committee determined six occupational health review questions (OHRQs; **Table 1**) and registered with international prospective register of systematic reviews (PROSPERO) (registration number: CRD42016048937). The GRADE approach[5] was used to assess the certainty level of evidence and develop recommendations, which were developed in accordance with the GIN-McMaster Guideline Development Checklist (http://cebgrade.mcmaster.ca/guidecheck.html), including external review and public comment components.

Here, we structured OHRQs using the Patient, Intervention, Comparison, Outcome (PICO) format. A comprehensive literature search, including the Cochrane Library, PubMed, and the Ichushi Web, was conducted using the six OHRQs in January 2016. Since the medical librarians involved and the authors could not locate relevant studies for two OHRQs, these two questions were set aside for future research, and the remaining four OHRQs and the search strategies involved are presented in **Table 1**. Duplicate articles were excluded from the literature set, and additional randomized control trials (RCTs) were adopted from existing systematic reviews,[3, 10, 11] as summarized in a preferred reporting items for systematic reviews and meta-analyses (PRISMA) flowchart[12] (**Figure 1**). Two authors (OHRQ 1: SD and SH, OHRQ2: GM and NK, OHRQ3: KT and NK, and OHRQ4: NN and NK) screened and expressed outcomes in specific values, e.g., sick-leave duration (continuous variables, hazard ratio (HR): 9, rate of RTW: 9, or quality of life score: 7, or burden for resource score: 7). The committee members numerically rated the importance of outcomes on a 1-9 scale (critical: 7-9, important: 4-6, and low importance: 1-3) following the GRADE approach.[13] Studies evaluated included systematic reviews or meta-analyses and RCTs corresponding to our PICO (P: sick-leave exceeds 4 weeks, I: workplace intervention, and O: length of sick-leave), and studies were in English or Japanese. We excluded studies regarding sick-leave due to accident compensation insurance; assessing only medical interventions; involving restricted populations such as the military, individual proprietors, or people engaged in dangerous duties; and without outcome values.

We extracted the PICO results and evaluated the bias risk using Review Manager (RevMan) version 5.3 for each OHRQ relating to the identified RCTs. For cohort studies, bias risk was evaluated using the Newcastle-Ottawa Scale.[14] For OHRQs 1 and 2, for which we were able to perform a metanalysis, the standard error of the

Table 2 Interpretation of strong and conditional recommendations.

Strength		
Strong recommendation	For employees	Most employees in this situation would want the recommended course of action, and only a small proportion would not.
	For occupational health professionals	Most individuals should follow the recommended course of action. Formal decision aids are not likely to be needed to help employees make decisions consistent with their values and preferences.
Conditional recommendation	For employees	Most employees in this situation would want the suggested course of action, but many would not. Decision aids may be useful in helping employees to make decisions consistent with their individual risks, values, and preferences.
	For occupational health professionals	Different choices will be appropriate for individual, and occupational health professionals must help each employee arrive at a management decision consistent with the individual's values and preferences. Decision aids may be useful in helping individuals to make decisions consistent with their individual risks, values, and preferences.

sick-leave duration, 95% confidence intervals (CI), and HRs were calculated. Overall heterogeneity was assessed through I^2 (the percentage of residual variation due to heterogeneity) reporting for each pooled estimate.

Bias risk, inconsistency, indirectness, imprecision, and publication bias were accessed, and the certainty of the body of evidence (high, moderate, low, and very low) was determined through summarizing the literature findings using the GRADEpro Guideline Development Tool (GDT)[5]. The recommendation's varying strengths (**Table 2**) were expressed as strong recommends or conditional (suggest), as derived from the GRADE approach. Each OHRQ was summarized using the evidence-to-decision (EtD) framework derived from the GRADEpro GDT.[15] The effects of interventions, resource utilization (cost-effectiveness), values and preferences, and feasibility in the EtD tables were reviewed, and the certainty of the overall body of evidence was assessed for each outcome. Subsequently, we updated searches in November 2016 to avoid missing more recent and important studies.

The committee proposed four recommendations, based on the evidence summarized in the EtD tables from a population perspective. All committee members reviewed and approved the final document, including the recommendations.

Results

All included studies relating to each OHRQ were summarized as a PICO format (**Appendix**). The relevant recommendations with evidence levels, as well as evidence concerning benefits, harm, and burden, are outlined as follows.

1. Recommendation 1 (OHRQ 1): An RTW program (e.g., re-work) at the workplace was suggested for musculoskeletal disorders (moderate evidence) and mental health disorders (low evidence)

1) Evidence summary

We found 11 RCTs, of which 5 were studies on musculoskeletal disorders,[16-20] and 6 on mental health disorders,[21-23, 25, 26] used in meta-analyses.

2) Benefits

Based on a meta-analysis of the five studies for musculoskeletal disorders, we estimated that RTW programs reduced sick-leave periods by 40.71 days (95% CI 60.69, 20.72) and, of the six studies for mental health disorders, RTW programs reduced sick-leave periods by 18.64 days (95% CI 27.98, 9.30). However, as this RTW program intervention type is not identical to re-work[9] in Japan, a high risk of indirectness should be considered when developing specific recommendations.

3) Harm and burden

Concerning cost-effectiveness analysis, an RTW assistance program such as re-work was reported in five studies.[18, 19, 27-29] Among the RTW interventions for musculoskeletal disorders, there was some evidence supporting cost-effectiveness,[18, 19, 27] but none for cost-effectiveness for workers on sick-leave due to mental health disorders.[27, 28]

2. Recommendation 2 (OHRQ2): Cooperation between occupational health staff and clinical staff regarding workers on sick-leave due to mental health disorders was suggested (low evidence)

1) Evidence summary

Four RCTs were used in the meta-analyses: two, musculoskeletal disorders;[30,31] one, mental health disorders[32] (also used for OHRQ1); and one, cancer.[32]

2) Benefits

Based on meta-analyses, interventions where occupational health staff cooperated with clinical staff had shortened by 8.73 days (95% CI 104.09, 33.38) the sick-leave period.

3) Harm and burden

Regarding cooperation between treating physicians, sick-leave related to musculoskeletal disorders,[33] but not to cancer,[3] was found to be cost-effective.

3. Recommendation 3 (OHRQ3): Social support was suggested as a best practice for workers on sick-leave (very low evidence)

1) Evidence summary

The certainty of the body of evidence was very low, based on one cohort study[34] discussing social support's effectiveness. Therefore, we did not propose any recommendations, and suggested intervention by supervisors and co-workers as a best practice approach instead.

2) Benefits

As shown online (http://jsohkant.umin.jp/misc/3HP/evidence/RQ5.pdf), social support had some effect in reducing sick-leave related to musculoskeletal disorders (HR 1.33; 95% CI 1.02-1.74) and other physical disorders (HR 1.43; 95% CI 1.04-1.97), but none related to mental disorders.

3) Harm and burden

For social support, no studies relating to harm or cost were found.

4. Recommendation 4 (OHRQ4): Work accommodation on RTW was suggested for musculoskeletal disorders (low evidence)

1) Evidence summary

Three studies were found regarding musculoskeletal disorders (one RCT[35] and two cohort studies[36,37]). For work accommodation, Viikari-Juntura et al. assessed part-time versus full-time work,[35] while Sampere et al. assessed high versus low physical activity.[36] Contrastingly, van Duijn and Burdorf investigated the effect of decreasing physical activity due to both physical load and working hours.[37] Since the interventions were too varied among the three studies, qualitative systematic reviews were undertaken.

2) Benefits

According to one RCT,[35] the time to sustained RTW of more than 4 weeks was shorter (median, 12 days (I) versus 20 days (C), p=0.10) among those on part-time sick-leave who worked for a short time before a complete RTW. One cohort study[36] provided evidence suggesting that, among those engaged in greater physical work, the RTW time needed was less than for those engaged in less physically intensive work.

3) Harm and burden

For work accommodation during RTW, no cost-related studies were found.

Further details concerning funding and public comments received during the process of developing the Return-to-work Guidelines in Occupational Health 2017, and on the development process, including the results of external evaluation by the appraisal of guidelines for research & evaluation instrument (AGREE II)[38] and corresponding developments, as well as the AGREE II reporting checklist[39] and conflict of interest information, have been published along with the guidelines text on the website.[7]

Discussion

Recommendations

OHRQ1: RTW programs were suggested to shorten the length of sick-leave due to musculoskeletal and mental health disorders (conditional recommendation).

OHRQ2: Collaboration between occupational health and clinical staff was suggested to shorten the length of sick-leave due to musculoskeletal and mental health disorders (conditional recommendation).

OHRQ3: Social or family support for workers on sick-leave improves work-related outcomes relating to RTW best practice.

OHRQ4: Work accommodation on RTW was suggested for musculoskeletal disorders (conditional recommendation).

Although these guidelines were derived from studies undertaken in non-Japanese contexts, with low evidence, the subsequent recommendations related to benefits and harm in the EtD framework[40] are likely to help Japanese occupational professionals and workers make appropriate decisions. A strength of this study was in supplying future research questions in this field, although it is not intended to imply that these questions should take precedence. We developed an effective set of guidelines, namely, the Return-to-work Guidelines in Occupational Health 2017, based on health-related evidence derived from current systematic reviews using the GRADE approach. Developing guidelines based on systematic reviews in occupational health is necessary to reach globally acceptable standards of excellence, thus the need for more evidence concerning RTW specific to Japan.

These guidelines have some limitations. Regarding the primary outcome, only a shortened sick-leave duration was considered, and additional studies of worker outcome measurements involving the recurrence rate of sickness, the quality of working life, and costs are required. To consider the balance of desirable and undesirable effects, studying RTW's cost-effectiveness in Japan is essential. The available evidence regarding occupational health in Japan remains limited; however, occupational health staff need to learn how to create evidence-based, highly transparent guidelines through searching the relevant literature, evaluating the evidence presented, and clarifying the priority research issues.

Two questions concerning sick-leave duration and RTW readiness criteria from the original six OHRQs remain priority study issues. These questions will be addressed through updated literature searches and regular revisions.

Conclusion

RTW programs (OHRQ1) and collaboration between occupational health and clinical staff (OHRQ2) shorten the length of sick-leave due to musculoskeletal and mental health disorders. Work accommodation (OHRQ4) was also conditionally recommended for musculoskeletal disorders. Social support was also a good practice approach despite insufficient evidence.

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Conflicts of Interest: None declared.

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