Effects of an Education Program for Stress Reduction on Supervisor Knowledge, Attitudes, and Behavior in the Workplace: A Randomized Controlled Trial

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Abstract: Effects of an Education Program for Stress Reduction on Supervisor Knowledge, Attitudes, and Behavior in the Workplace: A Randomized Controlled Trial: Kyoko NISHIUCHI, et al. Hygiene and Preventive Medicine, Okayama University Graduate School of Medicine, Dentistry, and Pharmaceutical Sciences—Supervisors at work play a large role in stress management at the workplace. Providing supervisors with necessary information and useful skills might be one effective approach that will lead to stress reduction. However, very few studies have investigated the effect of supervisor education by using a rigorous study design. In a randomized controlled trial, we tried to clarify how an education program for stress reduction influences supervisor knowledge, attitudes, and behavior concerning stress management. The subjects were 46 supervisors of an old, established sake brewery manufacturer of 301 employees. The supervisors were assigned to either the intervention group (24 supervisors) or the control group (22 supervisors). We conducted a single-session education program that included the guidelines for worker mental health promotion to the intervention group. The education program was composed of a basic education lecture and active listening training. The effects of this program on supervisor knowledge, attitudes, and behavior were measured using an original, self-administered questionnaire. The intervention effect was tested by examining an interaction effect between groups and time (before education, three and six months after education). The education favorably affected supervisor knowledge ($F=7.92; p=.001$). As for behavior, the intervention effect was marginally statistically significant ($F=2.51; p=.088$). For the attitude score, however, there were no beneficial effects. In conclusion, the provision of necessary information and useful skills to supervisors seems to improve supervisor knowledge and behavior regarding stress management at the workplace for at least six months.

Key words: Mental health promotion, Supervisor, Education program, Stress reduction, Knowledge, Attitude, Behavior

Global competition among companies has grown increasingly intense along with the progress of trade deregulation. Workplace environments are in the process of changing with the introduction of merit-based systems and employment adjustments, and thus there is concern about the influence of these factors on the physical and mental conditions of workers, especially regarding mental health. In Japan the proportion of workers who report high anxiety and stress at work and in their occupational lives exceeds 60%⁵. Moreover, lawsuits related to mental disorders and suicides in the workplace have been increasing⁶. Therefore it is necessary to strengthen worker mental health measures in the workplace.

Supervisors at work play a large role in stress management⁷. Supervisor support may affect the mitigation of employee stress reactions⁸. Supervisors are more aware of workplace problems and can propose stress reduction approaches that are feasible to the organization⁹. Furthermore, they are in a position in which the early discovery of employees suffering from...
mental disorders is possible, and there are many problems that cannot change unless supervisors take action. Therefore, the provision of necessary information and useful skills to supervisors is an approach that should lead to stress reduction at the workplace.

Very few studies have investigated the effect of supervisor education using a rigorous study design. Kubota et al. reported achieving the expected results by conducting 2-d workshops (a total of 30 h) on an active listening training program aimed at developing supervisor attitudes for effective listening and support for the psychological problems of their subordinates. However, the fact that this study had no inclusion of a control group was a major limitation. We conducted a series of controlled trials using a single-session supervisory education program that was developed in conjunction with the guidelines for worker mental health promotion. The findings from our studies that included randomized control trials indicated possible beneficial effects from supervisor education on the psychological distress and job performance of subordinates. We also found that web-based supervisor training was useful for improving supervisor support as perceived by subordinates. As a possible mechanism through which the psychological states of subordinates are improved, we suspected that the favorable changes of supervisors’ behavior regarding mental health practices played a role.

We decided to test our hypothesis in a randomized control trial. As for the effects of health education, the KAB (or KAP) model, i.e., Knowledge, Attitude, Behavior (or Practice), has been widely used as an evaluation index since the 1950’s. The model posits that the improvement of knowledge brings about a transformation of attitude, and then that behavior or practice changes as a consequence. The KAB (KAP) model may be applicable, therefore, to evaluations of how an education program for stress reduction influences supervisor knowledge, attitudes, and behavior concerning stress management.

Methods

Subjects

This study was conducted in a long-established sake brewery of 301 employees. We identified the immediate supervisor-subordinate relationships on the basis of performance assessment relationships (46 supervisors and 255 subordinates). All the supervisors were included in this study: they comprised forepersons (blue-collar employees) and middle-managers (white-collar employees).

Procedure

Supervisors were informed of the study by personnel management staff. We administered a questionnaire (baseline survey) as well as providing an information brochure for the promotion of employee mental health to all supervisors. We also encouraged supervisors to improve their workplace environment according to the guidelines.

Next, a simple random allocation was undertaken of all of eligible supervisors (n=46) to either the intervention group (24 supervisors) or the control group (22 supervisors). At the end of October, 2002, we provided an education program for stress reduction to the intervention group during working hours. Twenty-three supervisors attended the education program (participation rate 96%). Using a self-administered questionnaire developed to measure supervisor knowledge, attitudes, and behavior on the mental health promotion at the workplace, we verified the effect of the education. We conducted the questionnaire survey three times, i.e. before education, and three and six months after education. However, we could not conduct blind intervention due to the nature of the study design.

Intervention: Educational program for supervisor stress reduction

The education program for stress reduction had two pillars: a lecture on basic knowledge regarding mental health promotion and Active Listening Training with a role-playing exercise.

—Lecture on basic knowledge regarding mental health promotion (60 min)

The basic structure and content of the supervisor training was initially developed based on previous experiences by one of the authors (N.K.), and later standardized through a training course for occupational mental health at the Okayama University Graduate School of Medicine, Dentistry, and Pharmaceutical Sciences (2001–2005). It was also modified according to the guideline for worker mental health promotion. All trainers received a standardized training to design and conduct the supervisor training program. The 90-min basic education program was based on detailed protocols, manuals, and prepared teaching materials (Appendix 1). The lecture consisted of the following nine topics (details in Appendix 1: 1) case introduction, 2) significance of positive mental health, 3) supervisory roles for positive mental health promotion in the workplace, 4) awareness of and responses to mental health problems of subordinates, 5) support for employees returning to work, 6) improvement of the work environment, 7) self-care recommendations, 8) correct information about mental health problems, and 9) a summary and questions. These included a simulation game or quizzes to encourage attendees to think about the topics. An overhead projector was used, and recipients received a printed synopsis of the information covered in the lecture. We aimed to clarify the roles of supervisors by providing them with
the following information: early awareness of subordinate mental problems, support for back-to-work, consultation for subordinates including the utilization of mental health consultation from the perspective of recurrence prevention as well as early awareness of problems, the improvement of working environments on a daily basis in order to promote better working conditions, self-care recommendations, and correct knowledge about mental problems. Regarding the consultation for subordinates, careful consideration of confidentiality was stressed. Usually, information is provided about the available medical facilities because positive mental health activities in the workplace can be more easily conducted if a mental health consultation system is established and used\(^9\).

There were, however, no available medical institutions connected with this company. In this study, we simplified some parts ((1), (5), and (9) in Appendix 1) and conducted a 60-min education program. One of the authors (S.T.) was in charge of this basic program.

---Active listening training (180 min)---

We expected that if an appropriate skill was offered to the supervisors that their stress reduction approaches would become more apparent, compared with providing only information. The ability to provide counseling to subordinates is not only noted as a necessary skill for supervisors in guidelines for worker mental health promotion, but is in great demand in the workplace. We adopted an active listening education approach that previous studies have suggested is effective as a type of counseling skill\(^{13}\). Active listening is a way of listening and responding to another person, which improves mutual understanding, and consists of three attitudes “empathy”, “congruence” and “unconditional positive regard” called person-centered attitude. It was initially developed as a core technique of counselors listening to their clients in the Person-Centered Therapy by Carl Rogers\(^{16}\) and was later applied to non-therapeutic situations as a tool for better communication including supervisor-subordinate relationships\(^7\). An active listening specialist and one of the authors (S.M.), who are qualified as clinical psychologists, conducted the active listening training. This training program was made up of a 60-min lecture and a 120-min practice session. The contents of the lecture were “The place of consultation within the role of supervisor”, “Attitudes required by the listener”, and “The active listening method”. By presenting a concrete case, the trainers stressed the relevance of active listening and tried to enhance the supervisors’ motivation to practice. The practice session had two parts. In the first part of the practice session, the trainers supplied a model for listening. Three supervisors were selected as “Listeners”. In their responses to the trainers’ talks, trainers pointed out examples of improving their listening manners. In the second part of the practice session, role-playing of “Listener”, “Talker”, and “Observer” was done, in which each supervisor took one of the roles and repeated the session three times. In a single session (20 min), “Listener” tried to listen to the “Talker” with a person-centered attitude. “Observer” was instructed to point out good points of the “Listener”. Afterwards impressions and the points of doubt were discussed with all members.

---Outcome: Questionnaire to measure supervisor knowledge, attitudes, and behavior---

We developed a self-administered questionnaire to measure supervisor knowledge, attitudes, and behavior with respect to mental health promotion at the workplace\(^{10}\). The questionnaire items were originally made based on content that appeared in the guidelines\(^5\) that supervisors were required to learn (see Appendix 2; the questionnaire is available from the authors on request). Questions about knowledge level consisted of 17 items regarding the minimum requirement for knowledge about mental health and the roles of supervisors in mental health practice. Five items asking supervisors whether they had any intention to study or improve their behaviors for positive mental health in the workplace measured attitude level. Twenty-three items assessed behavioral level by asking the supervisors if they actually did anything for positive mental health in the workplace. The item format of knowledge and attitude was four points. A set of three- to five-point response options for behavior was prepared specific to each item to reflect the degree of the construct to be measured (e.g., for an item on a supervisor consulting an occupational physician regarding a back-to-work decision, “always consult an occupational physician”, “case-by-case based”, “never consult an occupational physician”, and “never had a subordinate with a mental problem”). Each item was scored on the basis of the response, and item scores were then summed across the respective items to produce a possible range of scores from 17 to 68 (reliability between before training and both three and six months after training: $\alpha = .90$–.93) for the knowledge level, 5 to 20 ($\alpha = .73$–.86) for the attitude level, and 23 to 87 ($\alpha = .82$–.87) for the behavioral level.

Socio-demographic and work-related variables were also asked via the questionnaire, including age (yr), sex, education (yr), occupational career (yr), and weekly working hours (h/wk).

---Statistical analysis---

To compare the characteristics between the intervention and control groups, a chi square test was used for categorical variables and Student’s t-test was used for continuous variables. Except for one outcome parameter (the attitude score measured after 6 months of the education program), the distribution of data was
confirmed as being normal by the Kolmogorov-Smirnov test. Equal variances across the intervention and control groups were also verified by Levene’s test. We thus employed a repeated-measures analysis of variance to compare groups with respect to changes in knowledge, attitude, and behavior scores. The intervention effect was tested by examining the interaction effect between groups (intervention and control) and time (before education, tested by examining the interaction effect between groups attitude, and behavior scores. The intervention effect was compare groups with respect to changes in knowledge, employed a repeated-measures analysis of variance to groups were also verified by Levene’s test. We thus test. Equal variances across the intervention and control confirmed as being normal by the Kolmogorov-Smirnov test.

**Results**

Table 1 shows the baseline characteristics of supervisors of the intervention (n=24) and control (n=22) groups. For age, sex, educational length, occupational career length, work time, and KAB scores, no significant difference was seen between the two groups.

The numbers of supervisors who responded to each of the three surveys were 24, 24, and 23 for the intervention group (response rate 100%, 100%, and 96%, respectively) and 22, 22, and 21 for the control group (response rate 100%, 100%, and 95%, respectively).

Table 2 shows the changes in the knowledge, attitude and behavior scores of the intervention and control groups. The knowledge score of the supervisors in the intervention group improved during the first three months and remained high until six months after the program (the mean knowledge scores were 40.7 at baseline, 45.7 three months after, and 45.0 six months after receiving education). In the control group, the knowledge score improved during the first three months, and the score improved during the following three months and exceeded the level of the intervention group (49.4, 49.6, and 52.0, respectively).

An item-by-item analysis showed that the intervention effect was significant for the following six items: “Basic understanding of stress”, “Role of support in back-to-work of subordinates”, “Information on counseling services at the workplace”, “Understanding how to cooperate with medical resources outside the company”, and “Understanding self-care” in the knowledge scale and “The desire to improve work environment problems” in the attitude scale.

**Discussion**

In a randomized controlled trial, we tried to clarify how an education program for stress reduction influenced supervisor knowledge, attitudes, and behavior concerning stress management. In a half-day educational session, supervisors were provided with comprehensive information on mental health in the workplace and received training including role-play exercises on active listening. Compared with the control group, supervisor knowledge at the three- and six-month follow-up times was shown to have improved significantly. Supervisor behavior also tended to change favorably, while we found no significant improvement in supervisor attitudes toward mental health. This is one of only a few randomized controlled trials on the effect of a supervisor education program on supervisors’ knowledge, attitude, and behavior. The follow-up rate was high, which contributed to the internal validity of the study.

Compared with just distributing a brochure regarding the guidelines to the control group, providing a lecture and active listening training in the educational session may have helped the attending supervisors understand the importance of mental health practices and improve their knowledge. The effect was clear at the three-month follow-up, suggesting that supervisor education is effective for enhancing supervisors’ knowledge of worker mental health. However, the knowledge score in the control group was improved to a similar level of that in the intervention group at the six-month follow-up. There is a possibility that supervisors’ knowledge in the control group improved though receiving relevant information from sources other than the intervention. However, a more plausible explanation is that supervisors responded three times to the questionnaire, which included a measure of knowledge of mental health and they could understand

**Ethical considerations**

All supervisors were considered anonymously in all the analyses. The names of supervisors were not given to the investigators. Responses to the questionnaire surveys were considered to be an agreement to participate in the study. After the comparative investigation ended, we provided a similar education program to the supervisors of the control group. Permission for this study was obtained from the Okayama University Committee on Ethics.
Table 1. Baseline characteristics of supervisors for intervention and control groups

<table>
<thead>
<tr>
<th></th>
<th>Intervention Group</th>
<th>Control Group</th>
<th>p value&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Age (yr)</td>
<td>24</td>
<td>50.0</td>
<td>5.2</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>23</td>
<td>95.8</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>Education (yr)</td>
<td>24</td>
<td>14.2</td>
<td>2.5</td>
</tr>
<tr>
<td>Occupational career (yr)</td>
<td>24</td>
<td>14.2</td>
<td>11.1</td>
</tr>
<tr>
<td>Hours of work (h/wk)</td>
<td>24</td>
<td>40.5</td>
<td>4.5</td>
</tr>
<tr>
<td>KAB scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>24</td>
<td>40.9</td>
<td>7.5</td>
</tr>
<tr>
<td>Attitude</td>
<td>24</td>
<td>13.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Behavior</td>
<td>24</td>
<td>47.1</td>
<td>8.6</td>
</tr>
</tbody>
</table>

<sup>a</sup> p value was determined by Student’s t-test for continuous variables and by χ²-test for sex difference.

Table 2. Changes of Knowledge, Attitude, and Behavior (KAB) scores for intervention and control groups<sup>b</sup>

<table>
<thead>
<tr>
<th>KAB scores</th>
<th>Intervention Group</th>
<th>Control Group</th>
<th>Within-Group Effects</th>
<th>Interaction Effects</th>
<th>Between-Group Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>After 3 Months</td>
<td>After 6 Months</td>
<td>Baseline</td>
<td>After 3 Months</td>
</tr>
<tr>
<td>Knowledge</td>
<td>22</td>
<td>40.7</td>
<td>45.7</td>
<td>45.0</td>
<td>21</td>
</tr>
<tr>
<td>Attitude</td>
<td>22</td>
<td>12.9</td>
<td>12.9</td>
<td>12.6</td>
<td>21</td>
</tr>
<tr>
<td>Behavior</td>
<td>21</td>
<td>46.8</td>
<td>50.9</td>
<td>49.1</td>
<td>19</td>
</tr>
</tbody>
</table>

<sup>b</sup> F statistic was listed for repeated-measures ANOVA.
what the desirable responses were. The result may also have been due to information transmission from the intervention group to the control group during the follow-up period.

Regarding the behavior score, the intervention effect was marginally statistically significant. The behavior score in the intervention group improved during the first three months after education. Some of the behavior items were meaningful only when supervisors had met a mental health problem among their subordinates. This may be the reason the effect on the behavior score was not as clear when compared with that for the knowledge score. The behavior score in the control group also improved between the three-month and six-month follow-ups, as was observed for the knowledge score. This pattern is also attributable to frequently responding to the questionnaire or from information transmission between the intervention and the control groups.

We failed to find a significant effect of supervisors’ education on their attitude to positive mental health among their subordinates, while there was a significant improvement in only one item, which was that concerning supervisors’ desire to improve work environment problems. The reason was not clear. Though it has often been assumed in the theory of health education\(^{11,12}\) that attitude is a mediator linking knowledge with relevant behaviors. In our supervisors’ education on worker mental health, knowledge may have directly triggered a behavior under a certain condition that requires that behavior, even without any attitudinal change. However, this may have been due to our measure of supervisors’ attitude. Since we could not find a standard measure of supervisors’ attitude on worker mental health, we developed a measure by adopting items asking supervisors’ intentions to learn and improve practical skills for positive mental health in the workplace. Selected items for supervisor intentions may not be a sensitive measure for attitudinal changes. Attitude is a complex construct that includes opinion, belief, and values\(^{17}\). Based on Bandura’s social learning theory, self-efficacy represents another aspect of attitude\(^{18,19}\). It would be better to use a measure of self-efficacy to assess changes of attitude. The item-by-item analysis also indicated that the scores of three items (desire to become aware of subordinate problems, desire to respond to the consultation of subordinates, and desire to support back-to-work for subordinates) were high at baseline and so their further improvements might have been difficult. This may be a reason for there being no intervention effect on attitude scores in this study.

**Limitations**

There were several limitations to our study. Lack of the process evaluation is the one. Although we tried to see whether an education program for stress reduction at the workplace improved supervisors’ basic knowledge of mental health, and changed their attitudes and behaviors accordingly, we did not evaluate how actively the supervisors participated in the program. Proper evaluation of education programs is difficult without knowing whether or not the intervention was adequately implemented. In other words, we could have expected clearer associations by taking into account the participants’ commitment to the program. Second, our study was conducted within a single workplace, and therefore our study population was not sufficiently representative of all supervisors across occupations. However, the participation rate was very high and we had almost complete responses to the questionnaires. Thus, we consider the internal validity of the current results to be high. Moreover, as our study was a comparative study inside the same workplace, that information exchange between the intervention and control groups might have taken place is an issue that cannot be denied. This shortcoming in our procedures could have diluted the intervention effect. Also, individual self-reports were used as our evaluation criteria of the effectiveness regarding changes in knowledge, attitudes, and behavior. A more sensitive index might be necessary in the future in order to better evaluate such changes, such as evaluations by supervisors or the number of consultations with medical resources. Finally, a six-month follow-up alone cannot determine the educational effect. As our trial may have had an initial educational effect, a more permanent effect, or the necessity for continuing or repeating education programs, should be evaluated.

**Conclusion**

Providing supervisors with necessary information and useful skills has been shown to improve supervisor knowledge and behavior regarding stress management at the workplace for at least six months.

**Acknowledgments:** We thank all the participants and Miss Etsuko Noda for their cooperation. This study was made possible by a grant form the Japan Industrial Safety and Health Association.

**References**


6) Hiro H: Stress prevention and supervisor training. San Ei Shi 43, 1–6 (2001)


16) Rogers C: The necessary and sufficient conditions of therapeutic personality change. J Consult Psychol 21, 95–103 (1957)


At the beginning of the lecture, a case of depression induced by work-related stress is introduced to build up a concrete image of the themes the attendees should learn regarding mental health problems. Issues that are raised in the lecture such as the significance of positive mental health and the role of supervisors in positive mental health in the workplace are introduced.

Emphasis is placed on three significance areas of positive mental health in the workplace: securing the health, life, and lifestyle of the employees; developing a productive and vibrant workplace/organization; and managing risk in the workplace. Supervisors are responsible for subordinates’ safety as the acting employer.

Supervisors have two important roles in relation to positive mental health in the workplace: improvements to the workplace environment and individual consultations and responses. Consideration of the privacy of subordinates is emphasized because they may otherwise become reluctant to tell supervisors the truth.

A simulation game provides an opportunity to think about the process of a case of returning to work. Early awareness of the case, how to deal with the case, and how to consult with the medical staff are explained. In addition, the participants are informed of medical institutions or liaison offices both within and outside the workplace.

A model support system for returning to work is illustrated, and supervisors are encouraged to establish such a system. Emphasis is placed on the importance of preventing a recurrence after returning to work by exemplifying a set of careful return-to-work decisions, taking into consideration the time of starting work, restrictions on work conditions, and a follow-up period with regular consultations and reports. Consent of the supervisor, medical staff, and the employee is emphasized.

The working environment includes all factors that affect health such as physical surroundings, work procedures, work hours, work patterns, and organization. As a convenient tool for the evaluation of stress factors in the working environment, the work-related stress checklist is introduced. The checklist contains 12 items, and the measures are comparable with the average of a representative Japanese workplace to evaluate the psychological stress level in the workplace. Some successful examples are introduced for the improvement of stress factors in the working environment. The goal is to get the supervisors to understand the importance of observing the workplace on a daily basis from the viewpoint of stress.

Because the attendees themselves are exposed to job stress, they are provided with some self-care recommendations, including stress awareness, relaxation, and coping procedures, as well as being provided with evidence of the buffering effects of healthy behavior.

Popular myths and facts about mental health problems are demonstrated to eliminate ingrained prejudices against those with mental health problems.

### Appendix 1. The supervisor basic education program (90 min)

<table>
<thead>
<tr>
<th>Topics</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Case introduction (10 min)</td>
<td>At the beginning of the lecture, a case of depression induced by work-related stress is introduced to build up a concrete image of the themes the attendees should learn regarding mental health problems. Issues that are raised in the lecture such as the significance of positive mental health and the role of supervisors in positive mental health in the workplace are introduced.</td>
</tr>
<tr>
<td>2. Significance of positive mental health (10 min)</td>
<td>Emphasis is placed on three significance areas of positive mental health in the workplace: securing the health, life, and lifestyle of the employees; developing a productive and vibrant workplace/organization; and managing risk in the workplace. Supervisors are responsible for subordinates’ safety as the acting employer.</td>
</tr>
<tr>
<td>3. Roles of supervisors in positive mental health in the workplace (5 min)</td>
<td>Supervisors have two important roles in relation to positive mental health in the workplace: improvements to the workplace environment and individual consultations and responses. Consideration of the privacy of subordinates is emphasized because they may otherwise become reluctant to tell supervisors the truth.</td>
</tr>
<tr>
<td>4. Becoming aware of and responding to a subordinate’s mental health problems (15 min)</td>
<td>A simulation game provides an opportunity to think about the process of a case of returning to work. Early awareness of the case, how to deal with the case, and how to consult with the medical staff are explained. In addition, the participants are informed of medical institutions or liaison offices both within and outside the workplace.</td>
</tr>
<tr>
<td>5. Support for returning to work (10 min)</td>
<td>A model support system for returning to work is illustrated, and supervisors are encouraged to establish such a system. Emphasis is placed on the importance of preventing a recurrence after returning to work by exemplifying a set of careful return-to-work decisions, taking into consideration the time of starting work, restrictions on work conditions, and a follow-up period with regular consultations and reports. Consent of the supervisor, medical staff, and the employee is emphasized.</td>
</tr>
<tr>
<td>6. Improving the working environment (10 min)</td>
<td>The working environment includes all factors that affect health such as physical surroundings, work procedures, work hours, work patterns, and organization. As a convenient tool for the evaluation of stress factors in the working environment, the work-related stress checklist is introduced. The checklist contains 12 items, and the measures are comparable with the average of a representative Japanese workplace to evaluate the psychological stress level in the workplace. Some successful examples are introduced for the improvement of stress factors in the working environment. The goal is to get the supervisors to understand the importance of observing the workplace on a daily basis from the viewpoint of stress.</td>
</tr>
<tr>
<td>7. Self-care recommendations (10 min)</td>
<td>Because the attendees themselves are exposed to job stress, they are provided with some self-care recommendations, including stress awareness, relaxation, and coping procedures, as well as being provided with evidence of the buffering effects of healthy behavior.</td>
</tr>
<tr>
<td>8. Correct knowledge of mental problems (5 min)</td>
<td>Popular myths and facts about mental health problems are demonstrated to eliminate ingrained prejudices against those with mental health problems.</td>
</tr>
<tr>
<td>9. Summary and questions (15 min)</td>
<td></td>
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</tbody>
</table>
Appendix 2. A questionnaire to measure supervisor knowledge, attitudes, and behavior

Knowledge level (each item is scored by four-point response format)
1. Understanding the significance of positive mental health at the workplace
2. Basic understanding of stress
3. Basic understanding of mental health care practices
4. Understanding of the company principles of positive mental health
5. Role of understanding and improving mental health problems
6. Role of becoming aware of subordinate mental problems
7. Role of consulting subordinates
8. Role of supporting back-to-work of subordinates
9. Understanding the effect of physical surroundings, work procedures, work hours, work patterns, human relationships, and organizations on mental health
10. Understanding how to evaluate work environments
11. Understanding how to improve work environments
12. Information on counseling services at the workplace
13. Understanding how to cooperate with medical staff
14. Understanding how to cooperate with medical resources outside the company
15. Understanding how to consult
16. Understanding how to provide support for back-to-work
17. Understanding self-care

Attitude level (each item is scored by four-point response format)
1. The desire to understand work environment problems
2. The desire to improve work environment problems
3. The desire to become aware of subordinate problems
4. The desire to respond to consultation by subordinates
5. The desire to support back-to-work of subordinates

Behavioral level (response format)
1. Has a grasp of work environment problems based on daily management and subordinate suggestions (three points)
2. Has come to understand work environment problems from questionnaire survey (three points)
3. Tries to improve work environment problems (three points)
4. Understands the workload (actual working hours) and work content of subordinates on a daily basis (three points)
5. Keeps records of workloads or instructions given personally (three points)
6. Pays attention to stress and the mental health of subordinates on a daily basis (three points)
7. Gather information on subordinate mental health problems (four points)
8. Talks with subordinates about mental health problems on a daily basis (four points)
9. Tries to have meetings/consultations as much as possible, especially with those who experience strong mental burdens or employees who work long hours and are exhausted due to overwork (four points)
10. Responds to the autonomous consultation of subordinates on a daily basis (four points)
11. Tries to listen to subordinates without haste (four points)
12. Provides information and advice to subordinates (four points)
13. When witnessing signs of overwork or of subordinates being in a bad condition, gives them specific instructions after consultation with occupational medical staff (four points)
14. Can use counseling services and/or staff in the workplace (four points)
15. Can use the available support resources outside the workplace (four points)
16. Can offer consultation regarding problems without letting the personnel section know (four points)
17. Considers the privacy of subordinates (three points)
18. Does not transfer individual information without that person’s consent (three points)
19. Makes back-to-work decisions according to the rules (four points)
20. Before back-to-work, provides occupational physician advice to subordinates (four points)
21. For every back-to-work decision, asks for the opinion of a specialist or occupational physician (five points)
22. Has regular consultations with individuals to understand the situation (five points)
23. After back-to-work, keeps occupational medical staff informed of the situation on a regular basis (five points)