Evaluation of a Multicomponent Psychosocial Skill Training Program for Junior Physicians in Their First Year at Work: A Pilot Study

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BACKGROUND: The present study was designed to gather preliminary information regarding the feasibility of implementing a psychosocial resilience program and to assess if the program would potentially promote protective factors (such as resiliency, self-efficacy) and job satisfaction as well as decreasing perceived stress among a sample of German junior physicians.

METHODS: Eighty-two junior physicians in their first year after graduation took part in the project and were randomized in a controlled trial to either an intervention or a control group for 3 months. The intervention group was offered resilience training combined with cognitive behavioral and solution-focused counseling. Primary outcome measures included scales of the PSQ, BRCS, SWOPE, and COPSQ. Two post-intervention follow-up measurements proved the effectiveness of the intervention.

RESULTS: There was a significant improvement between baseline and follow-up intervention scores on measures of resilience, self-efficacy, optimism, and perceived stress observed in the intervention group compared to the control group. Job satisfaction did not significantly differ between baseline and follow-ups.

CONCLUSIONS: These results indicate that the program to enhance resilience and decrease stress among physicians is feasible to implement as a group training program in a workplace setting. Further, the intervention provides statistically significant improvement in perceptions of distress and strengthens protective factors (such as resiliency).

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Physicians have a high prevalence of mental health problems compared to other university-educated professionals. They run an increased risk of depression, addiction, and suicide. Several reports indicate that the time period during postgraduate internship is especially associated with increasing symptoms of depression, high levels of perceived stress, and anxiety. Reasons are, for example, high levels of quantitative job demands, limited job autonomy, poor social and supervisory support, as well as excessive sleepiness.

Despite a rich literature on physicians’ work-related distress, very limited data are available on effective initiatives to decrease stress in their first year of work. One potential approach is to enhance individual protective factors such as resilience and self-efficacy.

Resilience refers to the ability of an individual to withstand adversity and is often seen as a form of self-recovery with positive emotional and cognitive outcomes, which in turn has an important role in realizing greater adaptability and life satisfaction. Researchers demonstrated that resilience factors help the individual to practice existing abilities for achieving personal development, resistance, and success in...
life despite demanding and challenging life events. Studies also suggest that resilience training may improve measures of psychological distress, work ability, and mental health in different workplace settings.\textsuperscript{3,11}

A review of stress management interventions showed that increasing employees’ personal resources such as resilience lead to reduced job stress and increased job satisfaction.\textsuperscript{12} In addition, cognitive behavioral and solution-focused training and counseling have been shown to be effective in decreasing work-related distress.\textsuperscript{13,14}

Although there is limited literature on the efficacy of using cognitive-behavioral training with young workers, the efficacy of these treatment methods have been valued in several settings (clinic, university, workplace). As illustrated, cognitive behavioral training was effective in increasing coping skills,\textsuperscript{15} preventing depressive symptoms,\textsuperscript{16} and improving levels of anxiety, anger, and functional disability.\textsuperscript{17}

Solution-focused practice has been applied and developed for the last 25 years.\textsuperscript{18} Recent review of controlled studies, covering various treatment settings with different outcome measures, show preliminary support for the efficacy of solution-focused brief therapy and counseling.\textsuperscript{18}

\textbf{Aim of This Study}
A psychosocial program involving resilience training and cognitive behavioral as well as solution-focused counseling has been developed. The aim of the present study was designed to gather preliminary information regarding the feasibility of implementing a psychosocial stress management and resilience training program for junior physicians and to assess if the program would potentially promote protective factors (such as resiliency) and job satisfaction as well as decreasing perceived stress among a sample of German junior physicians.

\textbf{Methods}
\textbf{Study Design and Participants}
This study was a randomized controlled trial. Hospital physicians were recruited from several clinic departments specializing in different medical specialties (eg, internal medicine, pediatrics, neurology, and gynecology). Junior physicians in their first year after graduation were invited per email, flyers, and word of mouth to participate in the project. Inclusion criteria were (1) employment as a hospital doctor, (2) working at least full time, (3) working experience of less than a year, (4) being able and willing to participate, and (5) agreement to complete a survey at least twice.

Ninety-six junior physicians agreed to participate, gave their informed consent, and were included between February and August 2014.

After obtaining the informed consent, physicians were randomized into an intervention and control group. Of the 45 participants in the intervention group, three were excluded due to health reasons (operation, accident). In addition, two participants of the control group did not respond to the follow-up questionnaires. In sum, 42 physicians took part in the intervention group, and 43 participated in the control group.

\textbf{Intervention}
The intervention group was offered psychosocial resilience training combined with cognitive behavioral and solution-focused counseling in a group of a maximum of 12 participants (four groups). Two psychologists delivered the intervention. Both of them were familiar with cognitive behavioral and solution-focused work in group settings. Each session lasted 2 hours, accomplished in one session per week.

The focus of the group work was the work situation, but any kind of topic was acceptable. The intervention was based on principles of cognitive behavioral training and solution-focused group work.\textsuperscript{18-20} The course consisted of 12 weekly sessions of 2 hours where the main focus was on coping strategies, support between the participants, and solutions and goals for the future.

Resilience training in this study focused on a number of objectives: for example, instructing and promoting fundamental communication, goal-setting, improving emotional problems, increasing motivation, self-efficacy, etc. Sessions involve psycho-education (theoretical input), watching videos, discussions, experiential exercises, and home assignments. In each session, a topic was introduced and discussed: (1) Introduction: “Day-to-day working life of a hospital physician,” (2) self-esteem and self-awareness, (3) resilience, (4) positive thoughts and emotions, (5) cognitive behavioral training, (6) goal setting, (7) social support, (8) communication, (9) conflict handling, (10) dealing with difficult decisions, (11) coping with work-related stress and relaxation, and at the end (12) session evaluation. Sessions also included how to speak up to supervisors and senior physicians, questioning their professional actions, seeking guidance about one’s own clinical performance, and reporting one’s mistakes.

The control group received no training but answered the questionnaire at baseline and follow-up.

\textbf{Survey Procedure}
Prior to receiving the first intervention lesson (baseline), after 3 months (follow-up 1) and after 6 months (follow-up 2), physicians of both groups (intervention and control group) were asked to complete a validated online questionnaire.

The surveys were conducted by using a secure web-based survey system, via links within e-mail messages. The link for the first survey (baseline) was sent after each participant signed the consent form; the link for the second survey was emailed the day after the last session (follow-up 1), the link for the third survey 3 months later (follow-up 2).
Outcome Measures
Primary outcome measures assessed at baseline and after 3 months included the Perceived Stress Questionnaire (PSQ), Copenhagen Psychosocial Questionnaire, “Brief Resilient Coping Scale” and the questionnaire “Self-Efficacy, Optimism, and Pessimism.” Perceived distress, resilience, self-efficacy, optimism, and job satisfaction were the dependent outcome variables.

Psychological distress was measured with the Perceived Stress Questionnaire including seven scales with 30 items (scales: Harassment, Overload, Irritability, Lack of Joy, Fatigue, Worries, and Tension).21 The items refer to the period of the last 4 weeks and can be answered with a 4-point rating scale (1=almost never, 2=sometimes, 3=often, and 4=usually). The resulting total score was linearly transformed between 0 and 100.21 Cut-off scores for moderate level of perceived stress were valued to be >45 to ≤60 and for high level 60.21

Resilience was evaluated by using the German version of the “Brief Resilient Coping Scale” (BRCS), which consists of four self-assessing items for resilient coping behavior. The scale was designed to capture tendencies to cope with stress in a highly adaptive manner.21

The questionnaire “Self-Efficacy, Optimism and Pessimism” (SWOP-K9) was used to analyze physicians’ individual resources.22 This instrument assesses individuals’ perception of self-efficacy, optimism, and pessimism on three scales (with nine items in total).

The good test quality criteria of the BRCS and the SWOP-K9 questionnaire have been discussed in a previous publication.21,22 The German version of the Copenhagen Psychosocial Questionnaire (COPSOQ) was used to evaluate physicians’ job satisfaction.23,24 The questionnaire includes 12 subscales measuring, ie, job demands, job resources, and job-related outcome factors (eg, job satisfaction). Job satisfaction was measured with four items and was related on a 4-point Likert scale (very satisfied, satisfied, not satisfied, very dissatisfied) with higher scores indicating more job satisfaction. Quality criteria of the COPSOQ have been proved.24

Items of all scales were transformed to a scale ranging from 0 (minimum value) to 100 points (maximum value). Additional items on sociodemographic data were included in the questionnaire, for example, gender, age, and marital and parental status.

Statistics
We first tested whether at baseline, the training and control groups differed in mean scores of the socio-demographic factors and job satisfaction with t tests for independent samples. Next, we analyzed, separately for the training and the control groups, within-group changes from baseline to follow-up with t tests for paired samples. The P values presented were corrected for multiple comparisons. For the main efficacy analyses, a mixed model analysis of variance was used to analyze the mean changes over time (from baseline to follow-up 1 and 2) for each of the outcome measures. The model included terms for both groups (intervention and control groups) and group x time interaction.

A two-tailed P<.05 was considered statistically significant. A sample size of a minimum of 40 physicians was selected for this pilot study after weighing statistical considerations along with logistical and resource constraints. A sample size of 40 provides a statistical power (two-tailed, alpha=0.05) of >85%.

Ethics
All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation and with the Helsinki Declaration of 1975.

Results
Sixty-two percent of the participating physicians were women (n=26), and 38% were men (n=16) in the intervention group and 59% women (n=25) versus 41% men (n=18) in the control group. The mean age was 28 years among all participants (no significant differences in age between intervention and control group).

Baseline data on gender, age, and perceived health indicate only small, insignificant differences between the control and the intervention group.

Outcome Measure
A summary of the outcome measures at baseline and follow-up 1 and 2 are presented in Table 1. For the intervention group, a significant increase was observed for resiliency (P=.01), self-efficacy (P=.03, P=.04) and optimism (P=.01). A significant decrease was observed in the Perceived Stress Scale (P=.01). No significant increase was analyzed for job satisfaction (P>.05).

When the change from baseline was compared between intervention and control group, a statistically significant improvement was found for resiliency, self-efficacy, optimism, and perceived stress in the intervention group compared to the control group.

Study participants presented significant improvements in resiliency at both follow-up surveys (P=.01, d=0.4). Mean change from baseline to follow-up 1 was +7.5 (ig) versus -0.3 (cg) and to follow-up 2 +7.2 (ig) versus -0.2 (cg).

In addition, self-efficacy increased significantly: follow-up 1: mean change was +6.4 (ig) versus +1.1 (cg) (P=.02, d=0.2) and for follow-up 2: P=.03; +5.9 (ig) versus +1.0 (cg). Participants of the intervention group also displayed significant higher levels of optimism (P=.001, d=0.3); follow-up 1: mean change +7.8 (ig) versus 0.4 (cg); follow-up 2: mean change +7.6 (ig) versus 0.2 (cg).

On the Perceived Stress Scale, physicians of the intervention group had significant decreases from baseline (P=.01, d=0.31). Mean scores changed significantly: -6.3 (ig) versus -0.5 (cg) (follow-up 1) and -5.8 (ig) versus -0.3 (cg) (follow-up 2).

Job satisfaction did not show any significant differences between
baseline and both follow-ups: follow-up 1: +0.5 (ig) versus -0.1 (cg); follow-up 2: +0.3 (ig) versus -.01 (cg) follow-up 2) (P>.05).

**Discussion**

This pilot study demonstrates that a brief intervention of resilience training and stress management among junior physicians is practicable. The study also suggests that the intervention has a potential to improve resiliency, self-efficacy, and perceptions of distress among junior physicians.

As mentioned above, the high prevalence and negative impact of physicians' distress is well described in the literature.26 Currently, however, few training programs exist with well-documented efficacy to decrease physicians' work-related stress and to enhance their work ability and well-being.

To our knowledge, this present study is the first randomized pilot trial that has evaluated the impact of a multicomponent stress management and resilience training.

We found a statistically significant decrease in perceived distress in the intervention group with no substantial changes in the control group. These differences have been sustained for 6 months after the end of the intervention period. This result shows evidence that a worksite stress management program for junior physicians is effective.

Comparable findings have been illustrated in several other interventions performed in various work settings.26,27 In a previous study performed by Krasner et al (2009), an intensive training in mindfulness, communication, and self-awareness delivered enhanced measures of physicians' mindfulness, perceived stress, burnout, and mood disturbances.28

In addition, our results indicate that such a psychosocial training may improve protective skill factors such as resilience and self-efficacy. The result has also been sustained for 6 months following the intervention.

Our finding is also equivalent to a study performed by Steinhardt et al (2008) in which a 4-week resilience intervention has been performed to enhance resilience and other coping strategies. Their results also indicated that the intervention group had significantly higher resilience scores, higher scores on protective factors (ie, self-esteem), and lower scores on perceived stress than did the control group.29

Additional studies on resilience training and/or cognitive behavioral therapy also showed comparable results.30 It appears that paying attention to protective factors against mental health problems is one of the most effective approaches in mental health prevention.31

The effect size of the present intervention was sufficient and comparable to other stress management and resiliency training interventions.32,33 It is reasonable that the combination of resilience training and the group setting is very effective. As current research studies have demonstrated, group sessions can act as a support network. For example, members of the training group often help to come up with specific ideas for improving a difficult (work) situation.34 Further studies should examine whether resilience training is more efficient in group settings or as individual training.

In this study, we found no evidence that the training program could improve self-reported job satisfaction. This result is in line with previous findings. A study by Waite et al (2004) on effectiveness of a resilience training also showed significant and positive improvements in resilience but with job satisfaction being the only variable not showing positive change.35 It is reasonable, when job satisfaction is measured by self-report, the scores on the scales are likely a function of both characteristics of the work environment and individual characteristics.36 This multicomponent intervention may

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**Table 1: Primary Outcome Measures From an Intervention to Evaluate the Effects of a Psychosocial Resiliency Training Among German Junior Physicians**

<table>
<thead>
<tr>
<th></th>
<th>Intervention Group</th>
<th>Control Group</th>
<th>Treatment Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline (Mean, SD)</td>
<td>Postintervention Follow-Up 1 (Mean, SD)</td>
<td>Postintervention Follow-Up 2 (Mean, SD)</td>
</tr>
<tr>
<td>Resilience</td>
<td>54.3 (17.3)</td>
<td>61.8 (18.4)</td>
<td>61.5 (17.9)</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>49.1 (15.6)</td>
<td>55.5 (17.7)</td>
<td>55.0 (17.3)</td>
</tr>
<tr>
<td>Optimism</td>
<td>51.4 (16.3)</td>
<td>59.2 (19.6)</td>
<td>59.0 (18.9)</td>
</tr>
<tr>
<td>Perceived stress</td>
<td>58.1 (19.3)</td>
<td>51.8 (20.7)</td>
<td>52.3 (20.4)</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>54.1 (20.2)</td>
<td>54.6 (24.4)</td>
<td>54.4 (23.9)</td>
</tr>
</tbody>
</table>
have an influence on characteristics of the person but is less likely to have an influence on contextual characteristics of the work environment. Our results may indicate that worksite interventions that are directed only toward the individual and not toward the work environment itself are less sufficient for affecting changes in job satisfaction. It is likely that more comprehensive intervention tools are needed to increase job satisfaction, including organizational and environmental actions and changes.

Limitations
This study analyzes preliminary results of a worksite intervention targeting psychosocial skill training and stress management. Our investigation does have some limitations. These include a small sample size that limits the external validity of the study results. Generalizations can only be made with caution. A larger and more representative study sample will allow better understanding of the effectiveness of the intervention. Additionally, there is a potential for positive bias within the study sample: participants were highly motivated to learn and practice new psychosocial skills. In line, the drop-off rate was very low.

This evaluation study is limited further by the nature of the data, which were self-reported. The follow-up assessments were also for a short duration, limiting our ability to assess the long-term effect of the intervention. The results from this study thus provide only preliminary evidence of efficacy and, as a next step, need to be confirmed in larger intervention trials with multiple follow-ups and longer time periods.

Conclusions
A brief intervention in psychosocial skill training and stress management for junior physicians is feasible and offers a potential to improve self-reported measures of protective factors such as resilience and perceptions of work-related distress. More research is needed to investigate long-term effectiveness. In addition, long-term interventions should be implemented. Results of such studies combined with topics directed toward the work environment itself may also show the efficacy of such a program on changes in job satisfaction and other work-related outcomes (absenteeism, etc.). Therefore, project continuation of this worksite program is strongly recommended.

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References


