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ORIGINAL ARTICLE

Does psychosocial competency training for junior physicians working in pediatric medicine improve individual skills and perceived job stress

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Abstract Pediatricians' job performance, work engagement, and job satisfaction are essential for both the individual physician and quality of care for their little patients and parents. Therefore, it is important to maintain or possibly augment pediatricians' individual and professional competencies. In this study, we developed and implemented a psychosocial competency training (PCT) teaching different psychosocial competencies and stress coping techniques. We investigated (1) the influence of the PCT on work-related characteristics: stress perception, work engagement, job satisfaction and (2) explored pediatricians' outcomes and satisfaction with PCT. Fifty-four junior physicians working in pediatric hospital departments participated in the training and were randomized in an intervention (n = 26) or a control group (n = 28). In the beginning, at follow-up 1 and 2, both groups answered a self-rated questionnaire on perceived training outcomes and work-related factors. The intervention group showed that their job satisfaction significantly increased while perceived stress scores decreased after taking part in the PCT. No substantial changes were observed with regard to pediatricians' work engagement. Participating physicians evaluated PCT with high scores for training design, content, received outcome, and overall satisfaction with the training.

Conclusion: Professional psychosocial competency training could improve junior pediatricians' professional skills, reduce stress perception, increase their job satisfaction, and psychosocial skills. In addition, this study indicates that the PCT is beneficial to be implemented as a group training program for junior pediatricians at work.

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What is Known:
- *Junior pediatricians often report experiencing high levels of job strain and little supervisory support.*
- *High levels of job demands make pediatricians vulnerable for mental health problems and decreased work ability.*

What is New:
- *Development, implementation, and evaluation of a psychosocial competency training for junior pediatricians working in clinical settings*
- *Psychosocial competency training has the potential to improve pediatricians' psychosocial skills and perceptions of perceived work-related stress and job satisfaction.*

Keywords Job satisfaction · Job strain · Mental health · Stress management · Work engagement

Abbreviations

b	Beta weight
CI	Confidence interval
COPSOQ	Copenhagen Psychosocial Questionnaire
N	Numbers
M	Mean
MD	Median
P	Probability
PCT	Psychosocial competency training
SD	Standard deviation
UWES	Utrecht Work Engagement Scale

Introduction

Junior pediatricians often report experiencing a high workload, irregular working hours, limited supervisory support, and little autonomy at work [35, 36]. These demands, together with a high degree of work–privacy conflicts, make pediatricians vulnerable for stress-related strain and raise concerns about their mental health and work ability [5, 25]. Self-reported data indicate that the time span during postgraduate training is especially linked with increasing symptoms of anxiety, depression, and high levels of perceived stress [28]. Studies discussed possible reasons, for example, excessive sleep deprivation due to long working hours, high levels of quantitative job demands, poor supervisory support, low job autonomy, and minimal work-related feedback [19]. Despite a rich literature on physicians' work-related distress, very limited research has been performed on effective initiatives to support junior physicians during their first years at clinical practice. One important method is to improve adequate skills and coping strategies on how to manage different work situations. Individual coping strategies refer to the specific efforts, both behavioral and mental, that individuals can use to handle, tolerate, and reduce stressful events [8].

Some studies of stress management interventions have demonstrated that improving employees' individual skills such as learning coping techniques lead to reduced job stress and increased job satisfaction [9]. As demonstrated, psychosocial skill training and counseling are effective in decreasing work-related stress, increasing job performance [23, 33], and lowering levels of anxiety, anger, and depressive symptoms among employees [16]. Further investigations demonstrated effects of improved physicians' job performance and patient care [14].

Aim of this study

The aim of this study was to implement and evaluate a psychosocial competence training (PCT) for junior physicians working in pediatric medicine involving psychosocial skills training and cognitive-behavioral as well as solution-focused. To our knowledge, no previous study evaluated the effects of such a training program for junior physicians in pediatric medicine. Therefore, we investigated (1) the effects of a PCT program on pediatricians' characteristics that potentially affect the quality of medical care: work engagement, job satisfaction, and stress perception and (2) analyzed pediatricians' perceptions of a PCT program and its outcomes.

Methods

Study design and participants

This study was designed as a randomized controlled trial. Junior physicians working in clinic departments of pediatrics were recruited from ten hospitals. Pediatricians were contacted via email and/or direct communication to participate in the psychosocial skills training and counseling program. Inclusion criteria were (1) employment in pediatrics (2) working full-time in a hospital (3) work experience of less than 2 years (4) being able and willing to participate (5) agreement to complete three questionnaires.

Fifty-four junior pediatricians gave their consent to be included in this study. Study participants were randomized into two groups (intervention and comparison group): (1) names of the pediatricians were listed in alphabetical order and (2) afterwards each name got a random number. The numbers had been allocated from number tables to the intervention or comparison group. In sum, 26 physicians took part in the intervention group and 28 participated in the comparison group. The study was performed between May and October 2014.

Intervention

The intervention group participated in a psychosocial skills training, combined with cognitive-behavioral and solution-focused counseling. Two qualified psychologists, both trained in cognitive-behavioral and solution-focused work performed the PCT in two training groups. The PCT consisted of 12 weekly sessions of 1.5 h, which focused on current working situations and problems, coping strategies, and support between colleagues and future professional goals. The training sessions included theoretical input, watching videos, oral group discussions, experimental exercises, and home assignments. In each session, a topic was introduced and discussed: (1) introduction: "working life of a pediatrician", (2) first work experiences in pediatrics, (3) and (4) psychosocial skills for pediatricians (mindfulness, self-awareness, resilience), (5) handling conflict in the work setting, (6) seeking guidance about one's own clinical performance in pediatric medicine, (7) relaxation techniques (progressive muscle relaxation), (8) organizational culture, reporting one's own mistakes and dealing with mistakes caused by others, (9) communication in the

hospital setting, (10) dealing with difficult decisions, social support, how to speak up to supervisors and senior physicians, (11) self-care, coping with work-related stress, and lastly, (12) session evaluation. The comparison group received no intervention but was asked to complete the questionnaire at baseline and at follow-up 1 and 2. The comparison group did not receive any support related to the intervention topic like any other psychosocial skills training, counseling, or therapy.

Survey procedure

Pediatricians of both groups (ig and cg) were asked to complete an online survey prior to receiving the first intervention lesson (baseline), after 12 weeks (follow-up 1) and after 6 months (follow-up 2). The survey was conducted by using a secure web-based survey system, via links within email messages. The link to the baseline survey was sent after the participating pediatrician signed a consent form. The follow-up survey link was emailed 12 weeks after the last session, the link for the follow-up 2 survey another 6 months later.

Pediatricians' evaluation of the PCT intervention program

Job satisfaction, perceived stress, and work engagement were the main study outcome variables. Baseline outcome measures evaluated at baseline and after 3 month included the Perceived Stress Questionnaire (PSQ), Copenhagen Psychosocial Questionnaire (COPSOQ), and the Work Engagement Scale (UWES).

Pediatricians' psychological job stress was measured with the PSQ [18]. The items of the PSQ can be answered with a 4-point rating scale and (1= almost never, 2= sometimes, 3= often, and 4= usually) and refer to the period of the last month. The COPSOQ was used to analyze pediatricians' job satisfaction [15, 22]. Pediatricians' job satisfaction was measured with four items on a four-point Likert scale (very satisfied, satisfied, not satisfied, very dissatisfied) with higher scores indicating more job satisfaction. Sufficient quality criteria have been stated for the German version of the COPSOQ [22, 24].

Pediatricians' work engagement was measured using the short version of the Utrecht Work Engagement Scale (UWES-9). The scale includes nine items/questions on three main factors: physicians' vigor, absorption, and dedication. Answers could be given on a 7-point rating scale ranging from 'never' to 'always/daily'. Higher scores represent a higher level of work engagement [27, 29]. The German version of the UWES has shown sufficient quality criteria (i.e., internal consistency) [26].

To evaluate pediatricians' perception of the PCT intervention program, we developed a questionnaire based on the four 'levels' of the training evaluation criteria from Kirkpatrick's model [13]. Course evaluation also included questions on training outcome and design (e.g., practice transfer of techniques and skills learned, interest, usefulness, etc. (see Table 3). Pediatricians were asked to respond to the questions on a scale ranging from 1 ('totally disagree') to 5 ('totally agree'). In addition to these outcome parameters as reported, the pediatricians were asked to give grades as an overall course evaluation (1-fail to 5-best).

Statistics

Descriptive statistics were used to describe the study sample. We also analyzed whether at baseline, the intervention and comparison groups differed in mean scores of socio-demographic factors and outcome measures (e.g., job satisfaction) with *t* tests for independent samples. Pediatricians' mean scores on work engagement, job satisfaction, and perceived stress were measured at baseline and two follow-up time slots for the intervention and comparison groups. Regression analyses were performed to analyze effects of the PCT program on pediatricians' job satisfaction, perceived stress, and work engagement. We reported the results as regression coefficients (b) and 95 % confidence intervals (CI) and *P* values where relevant. The quantitative analyses were performed using the statistical software IBM SPSS Statistics Version 22.0.

Results

Physicians' characteristics

Sixty-nine percent of the pediatricians in the intervention group were women ($n = 18$) and 31 % were men ($n = 8$) and 71 % women ($n = 20$) vs. 29 % men ($n = 8$) in the comparison group. The mean age was 27 years among all participants (SD = 2.1). The average time working as a physician was 1 year (SD = 1.13). Baseline data on socio-demographic differences indicate only small, insignificant differences between our intervention and comparison group.

Pediatricians outcome measure: work engagement, job satisfaction, and perceived stress

Pediatricians' scores on work engagement, job satisfaction, and perceived stress in both the intervention and control group at baseline (T0) and follow-up (1) and follow-up (2) are described in Table 1. We found that among physicians participating in the PCT program, job satisfaction scores increased significantly by 0.40 (95 % CI 0.28–0.59, $P = 0.01$). No significant changes were analyzed in the comparison group. For the intervention group, a significant decrease was observed in perceived stress (−0.23; 95 % CI −0.31–0.12) P = 0.01). No significant changes were analyzed in the comparison group.

Table 1 Pediatricians work engagement, job satisfaction, and perceived job stress at baseline (t0) and at follow-up (t1), and their changes from baseline to post-intervention period

Outcome	Instrument (scale)	Baseline outcome (t0)		Follow-up outcome (t1)		Follow-up outcome (t2)		Outcome differences (t1–t0)		Outcome differences (t2–t0)	
		Intervention group (N = 26) mean (SD)	Comparison group (N = 28) mean (SD)	Intervention group (N = 26) mean (SD)	Comparison group (N = 28) mean (SD)	Intervention group (N = 26) mean (SD)	Comparison group (N = 28) mean (SD)	Intervention group (P value)	Control group (P value)	Intervention group (P value)	Control group (P value)
Job satisfaction	COPSOQ (1–4)	3.05 (0.67)	3.27 (0.57)	3.45 (0.69)	3.31 (0.58)	3.39 (0.54)	3.28 (0.62)	**0.01**	0.61	**0.02**	0.84
Perceived Stress	PSQ (1–4)	3.25 (0.65)	3.12 (0.59)	3.02(0.62)	3.06 (0.57)	3.15 (0.58)	3.14 (0.51)	**0.01**	0.59	**0.03**	0.73
Work engagement	UWES (0–6)	4.62 (0.58)	4.42 (0.74)	4.64 (0.66)	4.43 (0.67)	4.59 (0.61)	4.37 (0.59)	0.69	0.84	0.71	0.75

SD standard deviation

In addition, no significant changes were found for work engagement ($P > .05$), neither for the intervention nor the control group.

Table 2 shows the results of the adjusted regression analyses for the influence of the PCT program on pediatricians' job satisfaction, perceived stress, and work engagement. The study results show that pediatricians' job satisfaction scores are positively associated with the PCT program (b = 0.39; 95 % CI 0.15–0.62; $P = 0.001$). In addition, the PCT program was also significantly associated with physicians' perceptions of work-related stress (b = 0.28; 95 % CI 0.11–0.51; $P = 0.02$). The study results demonstrated that pediatricians' work engagement scores were not significantly associated with the PCT program (b = −0.07; 95 % CI 0.04–0.19; $P = 0.71$).

Pediatricians' perception of the PCT program

In Table 3, the scores of the training evaluation (e.g., the overall training outcome and design) are illustrated. The evaluation results show an overall training satisfaction median score of 4.02. The median score for training design was 3.98. The evaluation of the training outcome ranged between a median score of 3.01 (practice) and 4.20 (recommendation).

The analysis of the training evaluation demonstrates that after the PCT all four levels of Kirkpatrick's training criteria could be met and were satisfactory. Pediatricians reported they learned to understand the values and principles of stress management and its practice in every day work (learning criteria). Regarding the criteria impact on behavior, pediatricians mostly stated the usage of the practical everyday instructions that are applicable in their clinical work life. They practice these strategies and skills in stressful work situations. For the fourth criteria, it is important to recognize that the participating physicians report that they feel more at comfort, experience a feeling of more control, and better focused when applying and repeating exercises learned in the psychosocial competency training.

Discussion

Main findings

Physicians in pediatric medicine demonstrated improved psychosocial skills and satisfaction and reduced stress levels after participating in a psychosocial stress management program. Pediatricians rated the training positively, and in terms of changed behavior they integrated practical contents in their daily clinical practice. The alteration of means in some of the outcome variables between the baseline and the follow-up measures may be considered rather small, but a summation of the small differences in all targeted factors may have a clinical significance [4]. The comparison between the

Table 2 Regression coefficients and 95 % confidence intervals for the effects of PCT on pediatricians' work engagement, job satisfaction, and perceived job stress

Outcome	Regression coefficients	95 % confidence intervals	Standard error	*P* value
Work engagement	−0.07	−0.04–0.19	0.193	0.713
Job satisfaction	0.39	0.15–0.62	0.121	0.001
Perceived job stress	0.28	0.11–0.51	0.173	0.024

intervention and control group, after adjusting for pre-intervention measures, showed a significant difference in the means of all dependent outcome factors except work engagement. All other factors had improved in the intervention group.

Explanation and interpretation of findings

The results of our study as presented showed a significant effect of psychosocial skills training and counseling, indicating the high potential/urgent need of psychosocial skill training for pediatricians.

In addition, physicians' subjective reports demonstrated that the intervention is relevant and important in clinical practice. Pediatricians' perceptions of the PCT program show an overall positive evaluation of the training with high scores for training design, training outcomes, and overall satisfaction with the training.

Our outcomes can be compared to similar studies describing a significant decrease on stress perceptions after stress reduction trainings [14, 30]. In line to our assumptions and published literature [3, 6, 12], we were able to show effects of the psychosocial training on subjective scores of perceived stress.

Additional psychosocial and stress management trainings have been implemented in different work settings and have been proven effective in many work collectives [6, 7, 17, 38]. In detail, Krasner et al. published an evaluation of communication training and self-awareness that delivered improved outcomes of physicians' work-related mindfulness and perceived job stress [14]. Other research groups have studied stress reduction programs offered during residency. They demonstrated similar improvements in stress reduction and decreased emotional exhaustion scores in comparison to the control group [10, 21]. These results might function as burnout prevention in a long-term perspective considering the influence of, e.g., job satisfaction in this construct.

Reduction of perceived stress after such an intervention might be explained by the active usage of coping skills, and a better regulation of one's own thoughts, feelings, and actions [11].

Table 3 Pediatricians evaluation of the PCT program

Evaluation domain and items	Mean (SD)	Median (min–max)
Overall training outcome[a]		
All in all, I like the training	3.89 (0.64)	3.81 (3.00–5.00)
All in all, the training is useful for my job	3.73 (0.61)	3.69 (2.00–5.00)
I practice what I had learned in the training	3.13 (0.68)	3.01 (2.00–4.00)
I derive personal use from this training	3.91 (0.81)	3.81 (3.00–5.00)
The learning goals were achieved	3.22 (0.69)	3.19 (3.00–5.00)
I will practice what I learned	3.53 (0.63)	3.43 (3.00–5.00)
The learning atmosphere was friendly	4.18 (0.45)	4.10 (3.00–5.00)
All in all, I would recommend the PCT program to my colleagues	4.25 (0.42)	4.20 (4.00–5.00)
Content of the training[a]		
Content of the PCT program was useful for my work as a pediatrician	3.81 (0.71)	3.69 (3.00–5.00)
Contents of the PCT were exemplified with concrete cases	4.25 (0.52)	4.18 (3.00–5.00)
I was aware of the learning goals	3.92 (0.65)	3.74 (3.00–5.00)
During the training I received feedback on my performance	3.18 (0.62)	3.15 (3.00–5.00)
I had the opportunity to reflect on what I had learned in the training	3.27 (0.51)	3.23 (3.00–5.00)
Overall training design[a]	4.02 (0.61)	3.98 (3.00–5.00)
Overall training satisfaction[b]	4.13 (0.63)	4.02 (3.00–5.00)

[a] Scores range between 1 (totally disagree) to 5 (totally agree);

[b] Scores range between 1 (fail) –5 (best)

These findings imply that PCT is suitable to support junior pediatricians: after the PCT, they reported handling (problematic) work situations more successfully. In addition, we found that the pediatricians gained a certain level of reflection and awareness concerning the stressful and challenging character of their work in pediatric medicine. In connection, this study focuses only on junior physicians in pediatric medicine. However, since previous studies showed that physicians from many other medical specialties have to deal with stressful working conditions in German hospitals (i.e., high workload, irregular working hours etc.) [2, 20], we assume this intervention would be of advantage in other medical settings and specialties as well.

In the evaluation of the PCT program, we found that the PCT is related with all training levels of Kirkpatrick [13]: the participating pediatricians demonstrated an increase of attachment and awareness of the relevance for physicians' well-being, the use of the learned trainings in coping with stressful situations and tasks, and improvement in their professional psychosocial skills. The overall reported positive changes and evaluation in pediatricians' psychosocial skills after the PCT are inspiring for further intervention studies.

In this study, we also found evidence that the training program could improve self-reported job satisfaction. Former studies also showed effects of stress management interventions on perceptions of job satisfaction [1, 31, 37].

The results of our study also included changes in physicians' work engagement. However, a significant improvement could not be found. A comparable study performed by van Berkel et al. (2014), also did not find any relations to employees' work engagement after participating in a mental health worksite intervention [34]. Two additional studies have also examined the effectiveness of a workplace intervention on work engagement. These studies did not find an overall effect on work engagement either [30, 32]. An explanation for the results might be that the 'ceiling effect' happened. This could be the case since the baseline scores were at such a high level that a significant improvement is not very likely [34].

Strengths and limitations

This study is the first to evaluate psychosocial competency training for junior pediatricians specifically. The strength of this study is the controlled study design. In addition, the duration of the follow-up was 12 months, which can be considered unique for worksite intervention research. The high response rate in this study demonstrates a further strength: the drop-out rate (loss to follow-up) was very low.

The major limitations of this pilot study are its small sample size in terms of external validity of the study results.

Although we demonstrated significant improvements in the outcome variables, we cannot conclude from our findings whether the intervention has any preventive long-term effect on mental health issues. We recommend that the PCT should be repeated in larger intervention studies with multiple follow-ups and longer periods of time. A further limitation is the assignment of only two experienced trainers who provided the training sessions. Standardization of trainings is difficult, and personal bias is probably influential but could not be measured in this study.

In addition, it cannot be ensured that pediatricians from the comparison group did not engage in self-study or may have been influenced by their colleagues who have been included in the intervention group. We assume that although the physicians in the control group did not take part in the intervention, they used alternative activities and/or strategies to cope with daily challenges (i.e., talking to friends, family or using self-help techniques). Unfortunately, we did not ask them about such alternatives. This can only be strongly recommended for further studies in the future.

Conclusion

The study results suggest that psychosocial competency training could be instrumental in increasing pediatricians' job outcomes, job satisfaction, and job stress perception. Overall, the participating pediatricians gave positive feedback about psychosocial competency training, thus justifying the implementation of such program in medical education and advanced training.

The advisability of implementing interventions to promote mental health in a clinical setting is the most relevant practical implication of the present study. The fact that, although the comparison group and the intervened group shared similar levels of perceived job stress at baseline, only the intervened group improved their scores for perceived stress and satisfaction, suggests that intervention played an active role in promoting positive effects. More counseling programs developed on a larger scale might very well improve junior physicians' psychological states and job performance.

Results of such intervention studies combined with topics directed towards physicians' work environment (i.e., work organization) itself may also show the efficiency of such a program on other work-related outcomes (absenteeism etc.). Provision of opportunities for pediatricians to learn protective coping techniques and skills integrated in the work life should be a future goal for hospitals. A training opportunity like this is generally adaptable and could be easily implemented in different hospital departments.

Continuation of this PCT program for physicians is strongly recommended. Follow-up surveys of the participating pediatricians to evaluate sustainability of the positive findings will hopefully be conducted as requested by the participating pediatricians.

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Authors' contribution SM, MB, and LB designed the study. MB, LB, and SM performed the investigation. SM and MB analyzed the data. SM and MB wrote the manuscript. SM, MB, LB, and DG interpreted the data and contributed substantially to its revision. All authors read and approved the final manuscript.

Compliance with ethical standards

Conflicts of interest The authors declare that they have no conflicts of interest.

Ethical considerations Ethical approval was granted by the Free University Berlin. The study is in accordance with the ethical standards of the responsible committee on human experimentation and with the Helsinki Declaration of 1964.

Informed consent Informed consent was obtained from all individuals participants included in this study.

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