

Healthcare Education

Improving patient-centered communication: Results of a randomized controlled trial



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ABSTRACT

Objective: Patient-centered communication is a key element for improving the quality of care in terms of therapeutic relationship, patient participation, and treatment process. Postgraduate trainings provide an essential way of promoting patient centeredness on the job where learning opportunities are often limited by time, patient volume, and economic pressure.

In the present study, changes in patient centeredness during clinical routines of postgraduate physicians (internal medicine) after a three-day communication training were assessed.

Methods: A randomized controlled trial was conducted in a primary care clinic. The intervention consisted of a communication training that aimed to enhance patient centeredness in postgraduate physicians. The training was based on a need assessment and the principles of deliberate practice. Workplace-based assessment of physicians' communication behavior was obtained using the Roter Interaction Analysis System.

Results: Three months after the intervention, trained physicians showed significantly increased patient centeredness ($F = 5.36$, $p = .04$; $d = 0.42$).

Conclusion: The communication training significantly improved patient centeredness during routine clinical practice. Thus, this training provides a structured and theory-based concept to foster patient centeredness.

Practice implications: The results support the implementation of communication trainings as a part of faculty development and medical specialization training.

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1. Introduction

Communication between physicians and patients is a key element of medical care, which is essential for anamnesis, diagnosis, informing patients about interventions, treatment planning, and outcome [1–3]. The characteristics of successful communication skills include creating a sustainable relationship, exploring patients' perspective, verbalizing emotional experiences, empathy, shared task-finding, and joint strategy development

[4–7]. These characteristics can be described as being “patient centered.” Studies have shown that patient-centered communication improves the working relationship, diagnosis, patient cooperation, and treatment outcome [8,9]. Furthermore, it is associated with increased patient satisfaction [4,10] and reduced medical expenses [11]. In contrast, poor communication can lead to limited patient adherence and can compromise trust in the physician-patient relationship [12,13].

Typically, patient-centered communication provides the conceptual basis of medical communication trainings [14,15]. Although these trainings are very heterogeneous [16], there is growing consensus on the structural and content features, which appear to be promising. Positive effects seem to particularly result from multi-day trainings with a high proportion of practical content (e.g., video feedback, role play with or without simulated patients) [17–19]. Among the discrete conversation techniques used in training, the WEMS technique (Waiting, Echoing,

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Mirroring, Summarizing) and the NURSE model for dealing with emotions (Naming, Understanding, Respecting, Supporting, Exploring) appear to be effective [20–23]. Recent publications have highlighted the value of structured and deliberate practice, ensuring that trainings result in long-term learning [24,25]. The opportunity to repeatedly practice basic skills and refine new behaviors outside high-pressure situations in combination with elaborate feedback seems to be crucial for successful learning [25,26]. In addition, how the training contents are embedded within practice-related context and connected to the needs of the target group is relevant [27–29].

In general, recent educational research has argued in favor of communication trainings for physicians in all training phases [30,31]. However, the value of these trainings has also been criticized. A recent study found a training-induced enhancement of end-of-life communication skills immediately after training; however, this effect did not transfer to subsequent patient interactions [32]. Furthermore, a review by Smith et al. [33] reported that only a few randomized controlled studies directly examined the *interventional* effects of patient-centered communication trainings as compared to receiving no training. In particular, there is less evidence regarding the effects of communication skills trainings for *postgraduate* physicians compared to undergraduates, and studies have reported mixed results [17,19,34,35]. Moreover, most studies with postgraduate physicians have been conducted in specific contexts (primary medical care or oncology) [36–40] or were tailored to specific communication events (e.g., breaking bad news [20,41–43] or teamwork training [44]). Whether patient-centered communication trainings are effective on a more general level, that is, within the broader context of everyday hospital routines, has hardly been investigated yet (see Ref. [45–47] for few exceptions). In contrast to communication in specific, challenging contexts (e.g., breaking bad news situations), physicians may be more likely to believe that their communication skills during ward routines are already highly adequate. Accordingly, they may be less motivated to get trained and thus be less likely to improve their communication behavior within these everyday contexts. Taken together, it remains unclear whether training-induced improvements of communication skills would also apply to communication events that occur during everyday hospital routines.

The present study sought to address this question. In particular, we aimed to investigate whether a training-induced improvement of patient-centered communication behavior could be demonstrated in a sample of experienced, postgraduate physicians during hospital routines. To meet the diverse communication demands in this rather generalized environment, a prior needs assessment was conducted. In particular, we developed a 3-day structured communication skills training for postgraduate physicians, which was based upon the theoretical framework of deliberate practice [24]. Furthermore, it comprised established training components (e.g., video feedback and role play) [17,19,22,46] tailored to challenging communicative contents in hospital routines as identified via the preceding needs assessment. Communication behavior of trained and untrained physicians was compared before and three months after training using a workplace-based video assessment of patient consultations.

2. Methods

2.1. Study design

The study was designed as a randomized controlled trial (RCT) including an intervention group and a waiting control group (Fig. 1).

The study was conducted in cooperation with the management board and the medical directors of three departments of internal medicine at a primary care clinic from September 2008 to March 2009. Physicians employed in these departments participated in the study and were exempted from work duties during the intervention. The study was approved by the ethics committee for Medical Research Ethics of the Landesärztekammer Baden-Württemberg and the ethics board of the cooperating clinic.

Physicians were randomly assigned to the intervention group or the waiting control group using stratified randomization. In particular, the randomization method was a matched pairs design as a special case of randomized block design. Pairs of physicians were generated that were matched for years of professional experience and demographic characteristics (gender, age). With regard to age and professional experience, the physician with the nearest values was chosen if there was no exact match. If more than one match was identified, pairs were assigned by drawing lots. Then, within each pair, the physicians were tagged either A or B by drawing lots. Physicians tagged as A were assigned to the intervention group and those tagged as B were assigned to the control group. The lists of physician pairs were created using Microsoft excel. Drawing lots was performed manually.

Data collection took place before and three months after the intervention. The three-month delay was chosen to capture the actual transfer of behavioral changes to the workplace as opposed to short-term reproductions of trained behavior. At each time point, five patient consultations of each physician were videotaped. These patient consultations took place during ward routines and covered the whole range of clinical conversation (e.g., admission, ward rounds) and different explicit goals (e.g., explaining diagnostic findings, preparing discharge). Patients were blinded to the group membership of the consulting physician (intervention vs. control group) and to the time of recording (before vs. after intervention).

Before the beginning of the study, all participants were informed about the study design and basic demographic data including prior training experience was collected. The following measures were realized to protect against contamination between intervention and control group: all physicians were instructed to perform “as usual” during videotaped conversations and were asked not to participate in educational activities related to patient-centered communication during the study. In addition, physicians in the intervention group were specifically asked not to discuss training contents or study-related information with physicians in the control group. Prior to data collection, two focus groups comprising volunteering physicians from the study sample discussed self-perceived difficulties and learning needs regarding communication skills. The results of this needs assessment were incorporated into the training (see Section 2.3).

Once the study was completed, physicians in the control group received equivalent communication training.

2.2. Inclusion criteria

Physicians

Participation in the study was mandatory for all senior physicians and residents employed at the departments of internal medicine. Two physicians were excluded because they had previously completed communication training similar to parts of the intervention. The remaining 42 physicians had no prior training in communication behavior or patient-centered medicine. Participants provided written informed consent following a detailed explanation of study goals, time-line, and content.

Patients

For both data collections, patients were recruited as an ad hoc sample. They were asked to participate when they were available

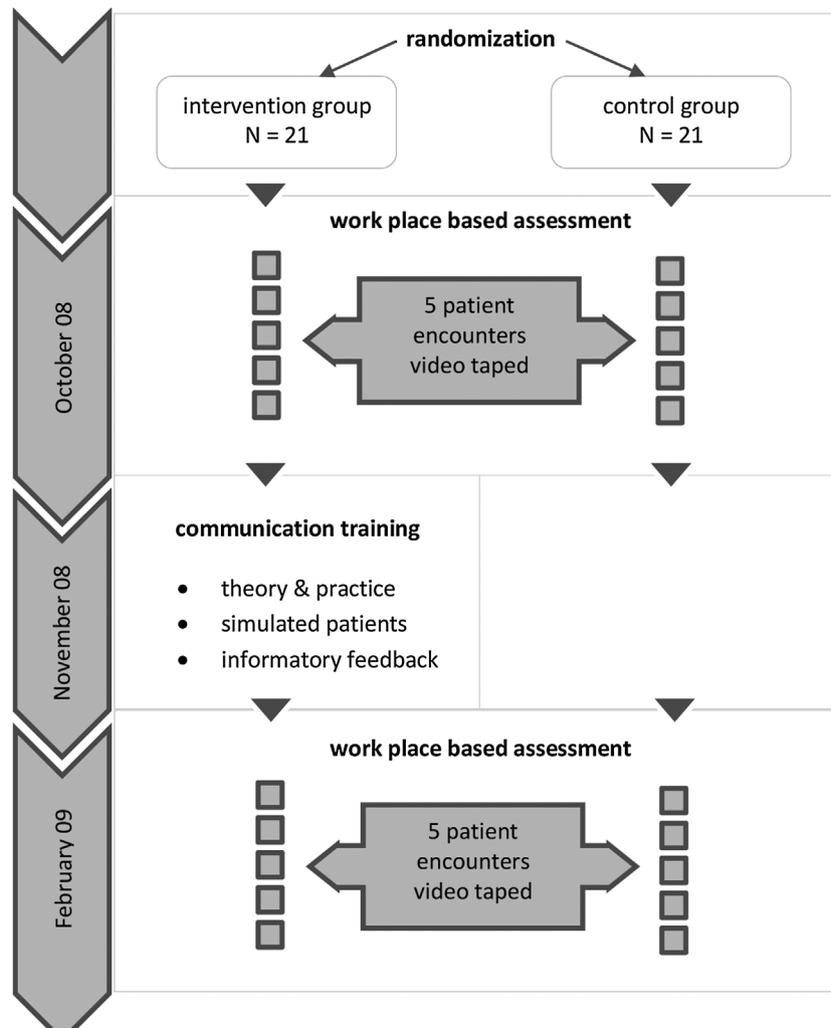


Fig. 1. Study design.

during the time period at which an individual doctor's assessment was planned. They were informed about the study objectives and signed an informed consent. Patients were excluded if their current health status prevented participation or if their knowledge of German language was insufficient.

2.3. Intervention

Prior to training development, a needs assessment was conducted using two focus groups [48–50], each with eight volunteering physicians from the study sample. Group discussions were recorded, transcribed, and analyzed using qualitative content analysis [51,52]. On this basis, relevant clinical scenarios were identified that reflected perceived communication challenges within the working environment. Based on these scenarios, 15 standardized roles for simulated patients were developed (e.g., dealing with anger and aggression, communication through an interpreter, or encouraging compliance and lifestyle changes).

The intervention group received 26 sessions (each lasting 45 min) of communication training during a period of six weeks. The first 16 sessions took place on two consecutive days. Two weeks later, each physician received feedback on the job during a supervised ward round (2 h), followed by the final training day (eight sessions).

The training days were structured as follows:

The first part consisted of theoretical introductions on specific models of communication and interview techniques. Afterward, physicians were repeatedly trained to use these techniques in groups of five to seven participants (two teachers per group). Training methods included role play with and without simulated patients, video feedback, immediate informative feedback, and a plenary debriefing.

Structural and teaching methods were derived from the concept of deliberate practice [24,27]. Essential elements are well-defined goals related to prior needs and performance level, explicit instructions, teacher supervision, personalized informative feedback, and repeated experiential training. The primary focus was on understanding the patient's perspective as a key feature enabling joint design of the treatment process. Specific interview techniques that foster patient-centered communication were taught, such as the WEMS technique, agenda setting, and the NURSE model [20,21,23].

The WEMS technique stands for Waiting, Echoing, Mirroring, and Summarizing [21]. It encourages active listening skills that are meant to open narrative space for the patient. The NURSE model involves five behaviors that are thought to be useful when dealing with emotions: Naming, Understanding, Respecting, Supporting and Exploring [20]. The model aims to foster empathic verbal skills, for example, naming emotions implicitly expressed by a patient. Agenda setting serves to inform the patient about the upcoming

consultations (e.g., time frame, asking for a patient's issues, or negotiating goals) [21].

2.4. Data analysis

2.4.1. Analysis of communication

Of 410 videos, 120 had to be excluded because of insufficient quality standards (e.g., unintelligible voice recording). The remaining 290 videotaped physician–patient conversations were coded by three different raters using the Roter Interaction Analysis System (RIAS) [53], which is currently seen as one of the most useful coding systems in medical communication research [54,55]. The present study used an extended version that had a total of 56 categories established by Langewitz et al. [22]. To determine inter-rater reliability, five random tapes of each rater were double-coded and Pearson correlation coefficients were calculated for each of the RIAS communication categories between each rater pair (all $r \geq .72$) as described by Kindler et al. [56]. Raters were blinded to the group membership of participants and the time of recording.

A total of 58,589 utterances (35,982 of physicians) were identified and assigned to RIAS categories. On average, physicians had 124.08 coded utterances ($SD = 74.26$) and patients had 78.22 ($SD = 46.71$). The mean duration of interviews was 443.15 s ($SD = 263.47$). To account for different lengths of physician–patient conversations, relative instead of absolute frequencies were calculated as indicators for the amount of each category of coded physician utterances. These relative frequencies were calculated by dividing the respective number of coded utterances by the duration (in seconds) of each conversation. Furthermore, extreme values within the sample were identified by box plots ($>3 \times (Q_{75} - Q_{25})$) and excluded from the analysis (i.e., conversations lasting more than 1000 s or less than 100 s). Ultimately, 272 conversations were included in the analyses. Conversation characteristics and RIAS measures are presented in Table 3.

2.4.2. Operationalization of patient centeredness

Patient centeredness was defined as the RIAS-based ratio of patient-oriented and physician-oriented statements. This ratio was calculated as the ratio of the sum (frequency of occurrence) of defined RIAS categories, such as giving and asking for psychosocial or lifestyle information, in relation to the sum of physician-centered verbal behavior, which consists of requesting or giving biomedical information [57,58]. A score <1 indicates a conversation focused on biomedical issues, whereas a score >1 indicates an emphasis on patient-related content.

2.5. Statistical considerations

Descriptive statistics were used to describe sample characteristics, communication behavior, and content of observed conversations.

To investigate the intervention effect, differences between the intervention and control group were tested at both time points and the differences between the time points were tested within each group. Because of the different numbers of videos per physician, linear mixed models were used whereby videos were nested within physicians. These analyses included the factor physician as random factor and – according to the analysis – group or time point as fixed factor.

We hypothesized that the trained physicians would improve their patient-centered communication skills as compared to baseline. We considered a small to medium effect size to represent a significant improvement. Analyses were performed using SPSS version 19 (IBM®).

3. Results

3.1. Participants

Physicians

Overall, 42 physicians (21 females; age: $M = 33.67$, $SD = 6.74$; years of postgraduate specialization: $M = 5.67$, $SD = 6.38$) participated in the study (Table 1).

One technical dropout occurred through data loss, while two physicians withdrew in the course of the study, due to illness and change in employment. Thus, 39 physicians (20 females; age: $M = 33.77$, $SD = 6.96$; years of postgraduate specialization: $M = 5.75$, $SD = 6.60$) were included in the final sample (Fig. 2).

Patients

In total, 410 patients (42% female) agreed to participate in the study. Of all the patients asked, only 2% declined to participate.

Patient's somatic illness severity was recorded using the German version of the Cumulative Illness Rating Scale (CIRS; Table 2) [59,60], which showed that 82.4% of them had at least one very severe somatic illness. Overall, 62.34% had vascular diseases, followed by 58.63% with cardiac and 24.68% with hematopoietic diseases.

3.2. Patient centeredness

Significant pre-training differences were found between groups regarding the amount of patient-oriented statements ($F(1, 37) = 6.53$, $p = .015$, $d = 0.85$). Physicians in the control group, for example, checked more frequently for understanding (control group: 2.07% vs. intervention group: 1.19%) and gave more

Table 1
Description of physician sample.

<i>N</i> = 42	<i>M</i> (<i>SD</i>)	IG	KG
Age (years)	33.67 (6.74)	33.38 (5.55)	33.95 (7.89)
Female (<i>n</i>)	21	11	10
Male (<i>n</i>)	21	10	11
Years of professional experience	5.67 (6.38)	5.45 (5.08)	5.89 (7.66)

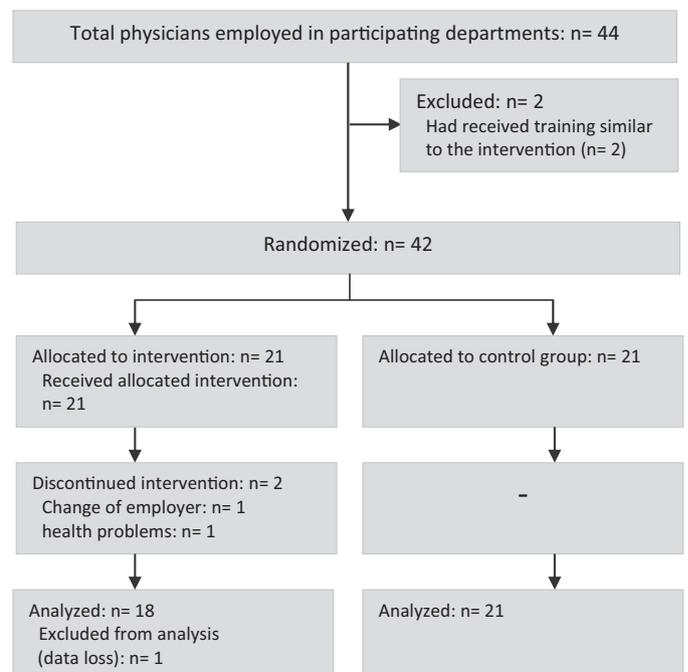


Fig. 2. Participant flow.

Table 2
Patient characteristics.

N = 410	
	M (SD)
Age (years)	63.7 (14.42)
Female	173
Male	237
Duration of treatment (days)	8.31 (7.15)
Relevant somatic comorbidity ^a	82.4%
Relative distribution of somatic illness (CIRS)	
N = 338 (overall n = 410; no data obtained n = 72)	
Vascular illness	62.34%
Cardiologic illness	58.63%
Hematopoietic illness	24.68%
Renal illness	20.45%
Liver, pancreas, gall bladder	16.23%
Respiratory illness	14.29%
Lower gastrointestinal illness	13.31%
Musculoskeletal illness	13.31%
Endocrine/metabolic and breast	11.04%
Upper gastrointestinal illness	10.71%
Psychiatric illness	9.42%
Neurological illness	8.77%
Genitourinary illness	5.84%
Eyes, ears, nose, throat, and larynx	4.22%

^a At least one severe somatic illness (Cumulative Illness Rating Scale) [60].

orienting statements (control group 7.02% vs. intervention group: 5.77%). Consequently, patient centeredness was higher in the control group as compared to the intervention group before intervention ($F(1, 37) = 5.74, p = .022; d = 0.83$). There was no significant pre-difference regarding the amount of physician-oriented statements ($F(1, 37) = 0.45, p = .505, d = .20$).

After training, the amount of patient-oriented statements and patient centeredness no longer significantly differed between the two groups ($F(1, 37) = 2.63, p = .113, d = 0.52$ and $F(1, 37) = 0.23, p = .635, d = 0.24$). However, the amount of physician-oriented statements was reduced in the intervention as compared to the control group ($F(1, 37) = 5.27, p = .027, d = 0.63$).

With regard to pre-post differences within groups, the intervention group showed a reduced amount of physician-oriented statements ($F(1, 17) = 7.11, p = .016, d = 0.50$), but no

significant difference in the amount of patient-oriented statements after training ($F(1, 17) = 1.01, p = .330, d = 0.17$). Most importantly, the relation between these two types of statements (i.e., patient centeredness) was different in the intervention group only. In particular, we found a significant improvement of patient centeredness in the intervention group after training ($F(1, 17) = 5.36, p = .033; d = 0.42$), while the control group remained at their initial level ($F(1, 20) = 0.01, p = .941, d = 0.11$). There were no differences regarding the amount of patient- and physician-oriented statements in the control group either ($F(1, 20) = 0.24, p = .628, d = 0.05$ and $F(1, 20) = 0.08, p = .778, d = 0.13$) (Tables 3 and 4).

3.3. Duration

Mean duration of conversations did not differ significantly between groups before intervention ($F(1, 37) = 1.25, p = .271, d = 0.46$) (Table 4).

After training, the conversations of the intervention group lasted significantly longer than those of the control group ($F(1, 37) = 9.19, p = .004, d = 0.90$). However, the increase in conversation length in the intervention group after training did not reach significance ($F(1, 17) = 2.23, p = .154, d = 0.30$). No significant changes regarding conversation length were found for the control group ($F(1, 20) = 0.06, p = .815, d = 0.05$).

3.4. Specific communication skills

In addition, the training effect was analyzed for three specific communication techniques: agenda setting, WEMS, and NURSE (Table 5).

Regarding agenda setting, the groups were comparable before training ($F(1, 37) = 0.05, p = .828, d = 0.05$). After training, there was a significant increase in agenda setting statements in the intervention as compared to the control group ($F(1, 37) = 28.54, p < .001, d = 1.37$). This was further substantiated by a significant increase within the intervention group after training ($F(1, 17) = 16.73, p < .001, d = 1.21$), which did not occur for the control group ($F(1, 20) = 3.17, p = .090, d = 0.50$).

No significant differences were found regarding the WEMS and NURSE techniques (all $p < .061$) (Table 5).

Table 3
Conversation characteristics and RIAS measures at pre- and post-intervention by group.

Characteristic	Intervention group			Control group		
	Pre	Post	Change ^a	Pre	Post	Change ^a
	M (SD)	M (SD)	Cohen's d (p value)	M (SD)	M (SD)	Cohen's d (p value)
Duration (s)	448 (182)	499 (163)	0.30 (0.15)	369 (157)	362 (139)	0.05 (0.82)
Physician-oriented statements	0.19 (0.03)	0.18 (0.03)	0.50 (0.01)*	0.20 (0.03)	0.20 (0.03)	0.05 (0.62)
Patient-oriented statements	0.23 (0.06)	0.24 (0.06)	0.17 (0.33)	0.28 (0.05)	0.27 (0.05)	0.13 (0.78)
Patient centeredness	1.26 (0.35)	1.42 (0.39)	0.42 (0.04)*	1.56 (0.36)	1.52 (0.42)	0.11 (0.94)

^a Change refers to the pre- vs. post-training difference (physician nested within time point), displayed separately for intervention and control groups.

* $p < .05$.

Table 4
Conversation characteristics and RIAS measures at pre- and post-intervention by time point.

Characteristic	Pre-intervention			Post-intervention		
	Intervention group	Control group	Difference ^a	Intervention group	Control group	Difference ^a
	M (SD)	M (SD)	Cohen's d (p value)	M (SD)	M (SD)	Cohen's d (p value)
Duration (s)	448 (182)	369 (157)	0.46 (.271)	499 (163)	362 (139)	0.90 (0.004)*
Physician-oriented statements	0.19 (0.03)	0.20 (0.03)	0.20 (0.505)	0.18 (0.03)	0.20 (0.03)	0.63 (0.027)*
Patient-oriented statements	0.23 (0.06)	0.28 (0.05)	0.85 (0.015)*	0.24 (0.06)	0.27 (0.05)	0.52 (0.113)
Patient centeredness	1.26 (0.35)	1.56 (0.36)	0.83 (0.022)*	1.42 (0.39)	1.52 (0.42)	0.24 (0.635)

^a Difference refers to the between-group difference, displayed separately for both time points.

* $p < .05$.

Table 5
Specific communication skills at pre- and post-intervention by group (mean relative frequencies per duration of conversation^a).

Characteristic	Intervention group		Control group	
	Pre	Post	Pre	Post
	M (SD)	M (SD)	M (SD)	M (SD)
Agenda setting	0.0004 (0.0013)	0.0049 (0.0051)	0.0004 (0.001)	0.00002 (0.0001)
NURSE	0.0008 (0.0015)	0.0011 (0.0016)	0.0006 (0.0009)	0.0005 (0.0008)
WEMS technique	0.031 (0.013)	0.035 (0.015)	0.039 (0.015)	0.039 (0.014)

^a Relative frequencies were calculated by dividing the respective number of coded utterances by the duration (in seconds) of each conversation.

4. Discussion and conclusion

4.1. Discussion

The present study is one of the few RCTs assessing communication training effects in clinical practice. In particular, this study focused on experienced physicians and the variety of communication events that occur during ward routines across different departments of internal medicine.

The intervention aimed to foster patient-centered communication skills, including supervised practice addressing individual training needs. Following the intervention, we found a significant improvement in the amount of patient-centered communication behavior, which did not occur in the control group. Overall, the patient-centered ratio in both groups was comparable to the results of previous studies (ratio in the present study: 1.42; ratio in previous studies [58,61]: 1.29–1.46). Our findings support the assumption that a structured communication skills training can indeed improve the communication behavior of experienced physicians toward a more patient-centered approach across consultation types. This is in line with the positive effects found by Fossli et al. [45] who conducted one of the few RCTs. Generally speaking, these previous and the present results underline the effective trainability of communication skills in a postgraduate context [22,23,36,40,62,63].

Overall, the data include a fairly representative picture of daily hospital work regarding patient sample with various health problems, also including both residents and consultants without selection bias. Different specializations in internal medicine and different settings (admittance to discharge) were represented. This can be interpreted as one of the primary strengths of the study. A further strength is the demonstration of an intervention effect with a certain delay after training. Often, training effects are measured immediately after interventions, which may simply reflect short-term reproductions of trained behavior, but may not necessarily persist within the course of daily routines. In contrast, the delayed assessment in this study measured the skills transfer into physicians' everyday work. Similar findings of skills transfer are reported by a number of other randomized controlled trials that showed training effects after delayed assessment in different clinical settings and disciplines (general hospital, primary care, oncology, pediatric care) [17,45,64,65]. However, it should also be mentioned that another study found that end-of-life communication skills were only improved immediately after training (as rated by simulated patients), but not in subsequent interactions with patients [32].

Besides an average increase in patient-centered behavior, the training effect could not be verified when looking at three specific communication techniques: WEMS, NURSE, and agenda setting. On a descriptive level, there was a slight increase in the frequency of all three techniques after training. However, only the difference regarding agenda setting reached significance. Overall, the total percentage of utterances containing specific emotional or other patient-oriented behavior still remained rather small after training. This result, however, seems to be consistent with findings

demonstrating the proportional dominance of medical information in physician–patient conversations [66–68]. The distribution between medical and socio-emotional aspects may not be surprising within the context of ward rounds investigated in the present study [69]. In general, the trained communication techniques are meant to open a narrative space for patients to contribute material as freely as possible. This is especially useful when physicians have no firm diagnosis yet. During ward rounds, however, the problems have usually been well established at the time of admission. The ensuing workup requires an exchange of medical information, for example, on test results. Thus, an enhanced proportion of socio-emotional aspects during physician–patient conversations may rather occur at other treatment stages, for instance, during admission or when a threatening diagnosis has to be delivered. However, this has to be investigated in future studies.

Overall, effect sizes were small to medium (d : .42–.50), but represent an acceptable learning effect considering the complexity of the clinical setting and the length of training. Especially during ward rounds, the proportional increase of patient-centered communication could indicate that patients received a more balanced consultation (e.g., less information overflow, improved inclusion of patient's perspective) as reported by Weber et al. [69]. Furthermore, patients may particularly benefit from a more common use of agenda setting during ward rounds, where time limitation is a problem.

With regard to the influence of communication trainings on talking time, previous studies have reported heterogeneous effects. While some studies showed an increase in visit duration [70,71], others reported no changes after training [45,63]. The present study indicated that while there was an increase of patient-centered communication after training, the average consultation time did not change significantly. Accordingly, this suggests that trained physicians adjusted their communication behavior as being more patient-centered, rather than adding patient-centered behavior to their repertoire.

Finally, we discuss some limitations of the present study and the possible future prospects. As a first limitation, all patients included in the study were identified by the participating physicians, which could result in a potential selection bias. However, an assessment of patient characteristics indicated a range of illness and targeted problems that are roughly representative of the general hospital population.

Second, no data concerning medical outcomes were collected. This was mostly due to the number of physicians and the variety of patients involved, which rendered it problematic to identify, retrieve, and compare medical outcome variables.

Third, a possible weakness of our study was that we only used 5 workplace based video-recordings. Considering that communication is highly context specific, physicians' communication behavior obviously varied between these 5 recordings which in turn might have diminished a reliable assessment of physicians' patient-centeredness.

Fourth, a difference between the intervention and control group regarding patient-centeredness was displayed at baseline. This

could indicate that the randomization procedure did not sufficiently control for potential confounding variables (e.g., prior attitude, differences in conversations). Nevertheless, the improvement shown in the intervention group supports the effectiveness of the training to enhance patient-centered communication as compared to the baseline level.

Future research is required regarding the effect of the present training on patient outcomes and to determine whether behavioral changes can be maintained over a longer period of time and under what pre-conditions. An evaluation of the communication training in different hospitals and independent contributions of intervention elements could also facilitate future improvements in terms of feasibility and effectiveness. Another important aspect would be to explore the possibilities of delivering the intervention in smaller units, thereby being able to integrate it more easily into working schedules.

4.2. Conclusion

The results indicated that our structured and time-efficient communication skills training significantly improved the patient centeredness of experienced physicians in routine clinical practice. This supports the idea that patient-centered communication skills can effectively be learned and/or improved on a general level.

4.3. Practice implications

The present study emphasizes the potential value of communication trainings to promote patient-centered communication as part of postgraduate and continuing medical education. The implementation of a time-efficient structured communication skills training, which provides the learning conditions for deliberate practice, has the potential to reach this goal. Thus, the present and similar trainings can make a valuable contribution to the in-house faculty development and medical specialization.

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Ethics application

This study was approved by the Ethics Committee for Medical Research Ethics of the Landesärztekammer Baden-Württemberg and the Ethics Board of the SLK Klinikum Heilbronn.

Conflict of interest

None disclosed.

References

- [1] S.J. Griffin, A.L. Kinmonth, M.W.M. Veltmn, S. Gillard, J. Grant, M. Steward, Effect on health-related outcomes of interventions to alter the interaction between patients and practitioners: a systematic review of trials, *Ann. Fam. Med.* 2 (2004) 595–608.
- [2] U.F. Trummer, U.O. Mueller, P. Nowak, T. Stidl, J.M. Pelikan, Does physician-patient communication that aims at empowering patients improve clinical outcome? A case study, *Patient Educ. Couns.* 61 (2006) 299–306.
- [3] J.R.L. Street, G. Makoul, N.K. Arora, R.M. Epstein, How does communication heal? Pathways linking clinician-patient communication to health outcomes, *Patient Educ. Couns.* 74 (2009) 295–301.
- [4] L.C. Zandbelt, E.M.A. Smets, F.J. Oort, M.H. Godfried, H.C.J.M. de Haes, Medical specialists' patient-centered communication and patient-reported outcomes, *Med. Care* 45 (2007) 330–339.
- [5] J. Silverman, S. Kurtz, J. Draper, in: J. Silverman, S. Kurtz, J. Draper (Eds.), *Skills for Communicating with Patients*, 2nd ed., Radcliffe Publishing, Oxford, 2005.
- [6] J. Bensing, Bridging the gap. The separate worlds of evidence-based medicine and patient-centered medicine, *Patient Educ. Couns.* 39 (2000) 17–25.
- [7] N. Mead, P. Bower, M. Hann, The impact of general practitioners' patient-centredness on patients' post-consultation satisfaction and enablement, *Soc. Sci. Med.* 55 (2002) 283–299.
- [8] M. Schmid-Mast, J.A. Hall, D.L. Roter, Disentangling physician sex and physician communication style: their effects on patient satisfaction in a virtual medical visit, *Patient Educ. Couns.* 68 (2007) 16–22.
- [9] J. Mallinger, J. Griggs, C. Shields, Patient-centered care and breast cancer survivors' satisfaction with information, *Patient Educ. Couns.* 57 (2005) 342–349.
- [10] M.K. Venetis, J.D. Robinson, K. LaPlant Turkiewicz, M. Allen, An evidence base for patient-centered cancer care: a meta-analysis of studies of observed communication between cancer specialists and their patients, *Patient Educ. Couns.* 77 (2009) 379–383.
- [11] K.D. Bertakis, R. Azari, Determinants and outcomes of patient-centered care, *Patient Educ. Couns.* (2011) 46–52.
- [12] J. Goedhuys, J.J. Rethans, On the relationship between the efficiency and the quality of the consultation. A validity study, *Fam. Pract.* 18 (2001) 592–596.
- [13] N. Kerse, Physician-patient relationship and medication compliance: a primary care investigation, *Ann. Fam. Med.* 2 (2004) 455–461.
- [14] S.A. Lewin, Z.C. Skea, V. Entwistle, M. Zwarenstein, J. Dick, Interventions for providers to promote a patient-centred approach in clinical consultations, *Cochrane Database Syst. Rev.* (2001) CD003267.
- [15] M.A. Stewart, J.B. Brown, W.W. Weston, I.R. McWhinney, C.L. McWilliam, T.R. Freedman, *Patient-Centered Medicine Transforming the Clinical Method*, Radcliffe Medical Press, Abingdon, 2006.
- [16] F. Dwamena, M. Holmes-Rovner, C.M. Gauden, S. Jorgenson, G. Sadigh, A. Sikorskii, et al., Interventions for providers to promote a patient-centred approach in clinical consultations, *Cochrane Database Syst. Rev.* (2012) 12.
- [17] A.M. van Dulmen, R.A. Holl, Effects of continuing paediatric education in interpersonal communication skills, *Eur. J. Pediatr.* 159 (2000) 489–495.
- [18] W. Brinkman, S.R. Geraghty, B.P. Lanphear, et al., Effect of multisource feedback on resident communication skills and professionalism: a randomized controlled trial, *Arch. Pediatr. Adolesc. Med.* 161 (2007) 44–49.
- [19] M. Berkhof, H.J. van Rijssen, A.J.M. Schellart, J.R. Anema, A.J. van der Beek, Effective training strategies for teaching communication skills to physicians: an overview of systematic reviews, *Patient Educ. Couns.* 84 (2011) 152–162.
- [20] A.L. Back, R.M. Arnold, W.F. Baile, K.A. Fryer-Edwards, S.C. Alexander, G.E. Barley, et al., Efficacy of communication skills training for giving bad news and discussing transitions to palliative care, *Arch. Intern. Med.* 167 (2007) 453–460.
- [21] W. Langewitz, Patientenzentrierte Kommunikation, in: T. von Uexküll, R. Adler, W. Herzog, P. Joraschky, K. Köhle, W. Langewitz, et al. (Eds.), *Psychosomatische Medizin: theoretische Modelle und klinische Praxis*, 7 ed., Elsevier, Urban & Fischer, München, 2011, pp. 338–347.
- [22] W. Langewitz, L. Heydrich, M. Nubling, L. Szirt, H. Weber, P. Grossman, Swiss Cancer League communication skills training programme for oncology nurses: an evaluation, *J. Adv. Nurs.* 66 (2010) 2266–2277.
- [23] W.A. Langewitz, H.P. Edlhaib, C. Hofner, A. Koschier, M. Nubling, A. Leitner, Evaluation of a two year curriculum in psychosocial and psychosomatic medicine – handling emotions and communicating in a patient centred manner, *Psychother. Psychosom. Med. Psychol.* 60 (2010) 451–456.
- [24] K.A. Ericsson, Deliberate practice and acquisition of expert performance: a general overview, *Acad. Emerg. Med.: Off. J. Soc. Acad. Emerg. Med.* 15 (2008) 988–994.
- [25] B.M. Kuehn, Patient-centered care model demands better physician-patient communication, *J. Amer. Med. Assoc.* 307 (2012) 441–442.
- [26] M. Jean-Jacques, M.K. Wynia, Practicing the fundamentals of patient-centered care, *J. Gen. Intern. Med.* 27 (2012) 398–400.
- [27] K.A. Ericsson, R.T. Krampe, C. Tesch-Römer, The role of deliberate practice in the acquisition of expert performance, *Psychol. Rev.* 100 (1993) 363–406.
- [28] J.C. Wouda, H.B. van de Wiel, The communication competency of medical students, residents and consultants, *Patient Educ. Couns.* 86 (2012) 57–62.
- [29] S. Kurtz, J. Silverman, J. Benson, J. Draper, Marrying content and process in clinical method teaching: enhancing the Calgary-Cambridge guides, *Acad. Med.* 78 (2003) 802–809.
- [30] J.K. Rao, L.A. Anderson, T.S. Inui, R.M. Frankel, Communication interventions make a difference in conversations between physicians and patients. A systematic review of the evidence, *Med. Care* 45 (2007) 340–349.
- [31] R.F. Brown, C.L. Bylund, Communication skills training: describing a new conceptual model, *Acad. Med.* 83 (2008) 37–44.
- [32] J.R. Curtis, A.L. Back, D.W. Ford, L. Downey, S.E. Shannon, A.Z. Doorenbos, et al., Effect of communication skills training for residents and nurse practitioners on quality of communication with patients with serious illness: a randomized trial, *J. Am. Med. Assoc.* 310 (2013) 2271–2281.
- [33] R.C. Smith, F.C. Dwamena, M. Grover, J. Coffey, R.M. Frankel, Behaviorally defined patient-centered communication—a narrative review of the literature, *J. Gen. Intern. Med.* 26 (2011) 185–191.

- [34] R.L. Hulsman, W.J. Ros, J.A. Winnubst, J.M. Bensing, Teaching clinically experienced physicians communication skills. A review of evaluation studies, *Med. Educ.* 33 (1999) 655–668.
- [35] P. Salmon, B. Young, Creativity in clinical communication: from communication skills to skilled communication, *Med. Educ.* 45 (2011) 217–226.
- [36] L. Fallowfield, V. Jenkins, V. Farewell, I. Solis-Trapala, Enduring impact of communication skills training: results of a 12-month follow-up, *Br. J. Cancer* 89 (2003) 1445–1449.
- [37] E.G. Price-Haywood, K.G. Roth, K. Shelby, L.A. Cooper, Cancer risk communication with low health literacy patients: a continuing medical education program, *J. Gen. Intern. Med.* 25 (2010) 126–129.
- [38] P. Butow, J. Cockburn, A. Girgis, D. Bowman, P. Schofield, C. D'Este, et al., Increasing oncologists' skills in eliciting and responding to emotional cues: evaluation of a communication skills training program, *Psychooncology* 17 (2008) 209–218.
- [39] C.L. Bylund, R. Brown, J.A. Gueguen, C. Diamond, J. Bianculli, D.W. Kissane, The implementation and assessment of a comprehensive communication skills training curriculum for oncologists, *Psychooncology* 19 (2010) 583–593.
- [40] T.A. Mjaaland, A. Finset, Communication skills training for general practitioners to promote patient coping: the GRIP approach, *Patient Educ. Couns.* 76 (2009) 84–90.
- [41] L. Vail, H. Sandhu, J. Fisher, H. Cooke, J. Dale, M. Barnett, Hospital consultants breaking bad news with simulated patients: an analysis of communication using the Roter Interaction Analysis System, *Patient Educ. Couns.* 83 (2011) 185–194.
- [42] L. Ungar, M. Alperin, G.E. Amiel, Z. Beharier, S. Reis, Breaking bad news: structured training for family medicine residents, *Patient Educ. Couns.* 48 (2002) 63–68.
- [43] A. Liénard, I. Merckaert, Y. Libert, I. Bragard, N. Delvaux, A.M. Etienne, et al., Is it possible to improve residents breaking bad news skills? A randomised study assessing the efficacy of a communication skills training program, *Br. J. Cancer* 103 (2010) 171–177.
- [44] N.L. Sehgal, M. Fox, A.R. Vidyarthi, B.A. Sharpe, S. Gearhart, T. Bookwalter, et al., A multidisciplinary teamwork training program: the triad for optimal patient safety (TOPS) experience, *J. Gen. Intern. Med.* 23 (2008) 2053–2057.
- [45] B. Fossl Jensen, P. Gulbrandsen, F.A. Dahl, E. Krupat, R.M. Frankel, A. Finset, Effectiveness of a short course in clinical communication skills for hospital doctors: results of a crossover randomized controlled trial (ISRCTN22153332), *Patient Educ. Couns.* 84 (2011) 163–169.
- [46] N. Ratanawongsa, M.A. Federowicz, C. Christmas, L.A. Hanyok, J.D. Record, D.B. Hellmann, et al., Effects of a focused patient-centered care curriculum on the experiences of internal medicine residents and their patients, *J. Gen. Intern. Med.* 27 (2011) 473–477.
- [47] K.B. Haskard, S.L. Williams, M.R. DiMatteo, R. Rosenthal, M.K. White, M.G. Goldstein, Physician and patient communication training in primary care: effects on participation and satisfaction, *Health Psychol.* 27 (2008) 513–522.
- [48] R.A. Powell, H.M. Single, Focus groups, *Int. J. Qual. Health Care* 8 (1996) 499–504.
- [49] T. Freeman, "Best practice" in focus groups research: making sense of different views, *J. Adv. Nurs.* 56 (2006) 491–497.
- [50] R.S. Barbour, Making sense of focus groups, *Med. Educ.* 39 (2005) 742–750.
- [51] P. Mayring, *Qualitative Inhaltsanalyse. Grundlagen und Techniken*, Beltz, Weinheim, 1983.
- [52] P. Mayring, *Qualitative Inhaltsanalyse. Grundlagen und Techniken*, Beltz, Weinheim, 2003.
- [53] D.L. Roter, *The Roter Method of Interaction Process Analysis*. RIAS Manual, John Hopkins University, Baltimore, 1991.
- [54] L.M. Ong, J.C. de Haes, A.M. Hoos, F.B. Lammes, Doctor–patient communication: a review of the literature, *Soc. Sci. Med.* 40 (1995) 903–918.
- [55] D.L. Roter, S. Larson, The Roter interaction analysis system (RIAS): utility and flexibility for analysis of medical interactions, *Patient Educ. Couns.* 46 (2002) 243–251.
- [56] C.H. Kindler, L. Szirt, D. Sommer, R. Hausler, W. Langewitz, A quantitative analysis of anaesthetist–patient communication during the pre-operative visit, *Anaesthesia* 60 (2005) 53–59.
- [57] N. Mead, P. Bower, Patient-centredness: a conceptual framework and review of the empirical literature, *Soc. Sci. Med.* 51 (2000) 1087–1110.
- [58] L.A. Cooper, D.L. Roter, R.L. Johnson, D.E. Ford, D.M. Steinwachs, N.R. Powe, Patient-centered communication, ratings of care, and concordance of patient and physician race, *Ann. Intern. Med.* 139 (2003) 907–915.
- [59] M.D. Miller, A. Towers, *Manual of Guidelines for Scoring the Cumulative Illness Rating Scale for geriatrics (CIRS-G)*, University of Pittsburgh, Pittsburgh, PA, 1991.
- [60] E. Strube, G. Hock, M. Nosper, Skala zur kumulierten Bewertung von Erkrankungen (Übersetzung), MDK Rheinland-Pfalz, 2003.
- [61] L.A. Cooper, D.L. Roter, K.A. Carson, L.R. Bone, S.M. Larson, E.R. Miller 3rd, et al., A randomized trial to improve patient-centered care and hypertension control in underserved primary care patients, *J. Gen. Intern. Med.* 26 (2011) 1297–1304.
- [62] C. Nikendei, H.M. Bosse, K. Hoffmann, A. Möltner, R. Hancke, C. Conrad, et al., Outcome of parent–physician communication skills training for pediatric residents, *Patient Educ. Couns.* 82 (2011) 94–99.
- [63] K.A. Bonvicini, M.J. Perlin, C.L. Bylund, G. Carroll, R.A. Rouse, M.G. Goldstein, Impact of communication training on physician expression of empathy in patient encounters, *Patient Educ. Couns.* 75 (2009) 3–10.
- [64] D.L. Helitzer, M. Lanoue, B. Wilson, B.U. de Hernandez, T. Warner, D. Roter, A randomized controlled trial of communication training with primary care providers to improve patient-centeredness and health risk communication, *Patient Educ. Couns.* 82 (2011) 21–29.
- [65] A. Liénard, I. Merckaert, Y. Libert, I. Bragard, N. Delvaux, A.M. Etienne, et al., Transfer of communication skills to the workplace during clinical rounds: impact of a program for residents, *PLoS ONE* 5 (2010) e12426.
- [66] W. Langewitz, M. Nubling, H. Weber, A theory-based approach to analysing conversation sequences, *Epidemiol. Psychiatr. Soc.* 12 (2003) 103–108.
- [67] D.L. Roter, M. Stewart, S.M. Putnam, M. Lipkin Jr., W. Stiles, T.S. Inui, Communication patterns of primary care physicians, *J. Amer Med Assoc* 277 (1997) 350–356.
- [68] J.M. Bensing, F. Tromp, S. van Dulmen, A. van den Brink-Muinen, W. Verheul, F.G. Schellevis, Shifts in doctor–patient communication between 1986 and 2002: a study of videotaped General Practice consultations with hypertension patients, *BMC Fam. Pract.* 7 (2006) 62.
- [69] H. Weber, M. Stöckli, M. Nübling, W.A. Langewitz, Communication during ward rounds in internal medicine. An analysis of patient–nurse–physician interactions using RIAS, *Patient Educ. Couns.* 67 (2007) 343–348.
- [70] D.L. Roter, J.A. Hall, D.E. Kern, L.R. Barker, K.A. Cole, R.P. Roca, Improving physicians' interviewing skills and reducing patients' emotional distress. A randomized clinical trial, *Arch. Intern. Med.* 155 (1995) 1877–1884.
- [71] D.T. de Ridder, N.C. Theunissen, S.M. van Dulmen, Does training general practitioners to elicit patients' illness representations and action plans influence their communication as a whole? *Patient Educ. Couns.* 66 (2007) 327–336.