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180° view on general practitioners' leadership skills: practice-level comparisons of leader and staff assessments using data from the cluster-randomised controlled IMPROVE*job* study

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ABSTRACT

Objectives Strong primary care leaders are needed to assure high quality services for patient populations. This study analysed general practitioners' (GP) leadership skills comparing practice-level self and staff assessments based on the full range of leadership model and the leader-member exchange (LMX).

Setting The questionnaire survey was conducted among German general practice leaders and their staff participating in the IMPROVE*job* trial.

Participants The study population comprised 60 German general practices with 366 participants: 84 GP practice leaders and 282 employees (28 physicians and 254 practice assistants).

Primary and secondary outcome measures Leadership skills of the practice leaders were measured using the Integrative Leadership Questionnaire (German Fragebogen für integrative Führung) and the LMX-7 questionnaire. Leaders rated themselves and practice staff rated their leaders. The data was analysed by paired mean comparisons on the practice level.

Results For most leadership dimensions, practice leaders rated themselves higher than their employees rated them. Differences were found for transformational leadership (p<0.001, d=0.41), especially for the dimensions 'innovation' (p<0.001, d=0.69) and 'individuality focus' (p<0.001, d=0.50). For transactional leadership, the dimension 'goal setting' differed significantly (p<0.01, d=0.30) but not the other dimensions. Scores for negative leadership were low and showed no differences between leaders and employees. Interestingly, employed physicians' rated their practice leaders higher on the two transformational ('performance development', 'providing a vision') and all transactional dimensions. The LMX-7 scale showed high quality relationships between leaders and employees.

Conclusions This 180° analysis of GPs' leadership skills with self and employee ratings indicated good relationships. There is a potential to improve leadership

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This 180° feedback approach in the general practitioner setting allows for a better understanding of leadership from the perspective of different practice professionals.

⇒ The data reflect a typical spectrum of German general practices with solo and group practices, but results may differ in other settings.

⇒ Leadership teams, not individual leaders, were rated in group practices to capture leadership at the practice level.

regarding goal-setting, innovation and focusing on individual team members. These results allow for the development of targeted interventions.

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BACKGROUND

Strong primary care leaders and a strong primary care workforce are important to assure the health of populations and primary care teams.[1–3] A recent systematic review of 20 studies by Meredith *et al* showed an association between stronger leadership and less burnout among different medical professionals in the USA.[4] In contrast, poor leadership skills have a negative impact on job satisfaction,[5–7] staff well-being[8] and the quality of patient care.[5 9 10] A review showed correlations between better leadership and various quality of care indicators, for example, pain, safety and 30-day mortality.[11] In addition to individual outcomes, leadership is important to promote organisational changes (eg, the

implementation of information technology-supported care).[12]

Scientifically, leadership is conceptualised in several theories. One of the most studied leadership frameworks is the full range of leadership model (FRLM), which integrates transactional, transformational and negative leadership.[13 14] Transactional leadership describes leaders' structuring of work situations, the exchange of contingent rewards (eg, work against salary) and the management by exception.[13–15] In contrast, transformational leadership moves beyond leaders' and staff's self-interests. It focuses on the staff's attitudes and values regarding overarching goals such as self-actualisation, organisational achievements and the well-being of others and society as a whole.[13 14] Building on the FRLM, a recent further development, the so-called Implementation Leadership Scale, focuses on the role of leadership for implementation of organisational changes.[12] Another important leadership theory, the leader-member exchange (LMX), specifically addresses the relationship between leaders and staff. It concentrates on the perceived quality of the dyadic relationship between a staff member and the immediate leader.[13 16] The relationship reflects a dyadic social exchange process ranging from low LMX, described by limited social transactions with more transactional leadership to high LMX, which represents a transformational approach with a high degree of social exchange and a mature leader-member partnership.[16] High-quality relationships positively influence employees' work-related well-being and are associated with higher job satisfaction of healthcare workers.[17]

Based on these theories, various questionnaires were developed, for example, the LMX questionnaire 'LMX-7'[16] and the German questionnaire 'Fragebogen für integrative Führung' (FIF; in English: Questionnaire for Integrative Leadership).[15 18] These instruments allow for a multi-rater perspective: the leader's and the staff's views on the leader's behaviour are measured and compared providing 180° feedback. This method is valuable because assessments from different perspectives create a more comprehensive picture of the leaders' actual skills and performances.[19] Two recent reviews of 60 studies from various medical settings showed that such approaches are increasingly applied in medical education and graduate training,[20 21] but have not been used to evaluate general practitioner (GP) leaders and their teams. Effective interventions to improve leadership were developed and evaluated in the hospital[22] and healthcare management setting.[23] For example, Saravo et al showed an improvement in transformational and transactional leadership performance of 57 medical residents in hospital rotations after a 4-week intervention.[22] In addition, a 2018 study from Hill et al highlighted positive effects of a leadership training for surgical residents on teamwork and team involvement in decision-making.[24] However, such interventions have not been implemented in German primary care, although high chronic stress and burnout rates are reported for this workforce.[25 26] The need is even larger

as about half of the German GPs who mainly work in GP-owned private practices,[27] will reach retirement age in the next 10 years.[28] Based on the leadership frameworks mentioned above, the publicly funded IMPROVE*job* study aimed to improve the job satisfaction of physician leaders and practice personnel of German GP practices focusing on leadership, communication and work processes.[29 30] At baseline, GPs' leadership skills were evaluated comparing GP leaders' self and staff ratings on practice level.

METHODS

This analysis draws on the baseline data of the IMPROVE*job* study, which is designed as a cluster-randomised controlled trial to improve job satisfaction among practice personnel. The details are described in the study protocol.[29]

In short, a total of 60 GP practices in the North Rhine region in Germany were recruited by the Institute of General Practice and Family Medicine of the University of Bonn. The sample comprised single (owned by one practice leader) and group practices (owned by more than one practice leader), some of which were also involved as teaching practices (affiliated to a university). The study aimed to recruit practice teams, including physician leaders, employed physicians and practice assistants. A total of 84 GP practice leaders, 28 employed physicians and 254 practice assistants were recruited. In Germany, primary care is typically provided by GP-owned practices with one to three physicians. For each physician, practices employ about one to two certified practice assistants who finished a vocational training of 3 years. Similar to other regions worldwide, the size of group practices is increasing.

Patient and public involvement

The study did not target patients, but general practice personnel. Therefore, no patients or members of the public were involved.

Ethics

The study was approved first by the Ethics Committee of the Medical Faculty of the University of Bonn (reference number: 057/19, date of approval: 20 February 2019). In addition, the Ethics Committees of the Medical Association North Rhine (Lfd-Nr.: 2019107) and of the Medical Faculty, University Hospital of Tuebingen (project no.: 446/2019BO2) approved the study protocol. The study was performed in accordance with the Declaration of Helsinki. All participating practice team members received study information and signed informed consent forms.

Measures

Practice leaders answered a short questionnaire on practice characteristics and the questionnaire for practice leaders. Employed physicians and practice assistants completed different versions of the same employee

questionnaire. Details of the methods and the characteristics of the study population are published.[29 30]

All participants provided socio-demographic, professional and work-related characteristics which are published.[30] In addition, GP leaders and practice staff filled the following two leadership questionnaires:

Integrative Leadership Questionnaire (FIF)

Transformational, transactional and negative leadership were measured using the FIF questionnaire. Its scales' validity and internal consistency are confirmed for different populations.[18 31] The FIF has been used in non-medical and hospital settings,[32] but not in primary care.

All 40 items of the FIF are answered on a 5-point Likert scale and are worded to reflect either the leader's or the staff's position.

The measures comprise:

▶ The transformational leadership scale consisting of six dimensions: innovation, team spirit, performance development, individuality focus, providing a vision and being a role model.
▶ The transactional leadership scale with two dimensions: goal setting and management by exception.
▶ The negative leadership scale with two dimensions: laissez-faire and destructive leadership.

Leader-member exchange

The relationship quality between leaders and staff is measured using the LMX-7 questionnaire with seven items on a 5-point Likert scale, which are worded to reflect the leader or the staff position.[16 33 34]

The multi-rater, 180° approach is applied to the two leadership scales. Results of such assessments are usually shared with the ratee, yet previous studies showed mixed reactions in the medical setting.[35 36] Therefore, the results of the 180° feedback in our study were not shared with the participating practices but are used on an aggregated level for research purposes only.

Statistical analysis

Statistical analyses were conducted using SPSS Statistics V.27 (IBM, Armonk, New York, USA, 2020). All analyses were carried out at the participant and the practice level.

The FIF data were analysed according to the official manual.[18] Mean scores for transformational, transactional and negative leadership were summarised both for the respective main scale and all dimensions: for transactional and transformational leadership, they ranged from 1 (worst rating) to 5 (best rating); for negative leadership, they ranged from 1 (best rating) to 5 (worst rating). For comparison, scores were standardised using T-scaling tables from reference populations as defined by Rowold and Poethke.[18] These T-values are based on a normal distribution around 50 (SD=10). Thus, values above 70 only reflect about 2% of the reference population from German-speaking countries.[18]

The LMX-7 was analysed per standard protocol by creating a sum score of all seven items without transformation.[34] The LMX-7 score can range from 7 to 35 with five standard categories which were interpreted as follows: score 7–14=very low; 15–19=low; 20–24=moderate; 25–29=high, 30–35=very high.[37] Inadvertently, question seven was missing on all employed physicians' questionnaires, which reduced the answered questions to six. As the LMX-7 manual does not suggest a standard approach for missing values, we excluded employed physicians from the further analyses.

For the 180° feedback approach on practice level, the combined mean scores of employed physicians and practice assistants per practice were compared with the self-assessment of their respective leaders using paired t-tests, as the data satisfied the condition of a normal distribution with the Kolmogorov-Smirnov test. Cohen's d was applied to determine the effect size of mean comparisons with the following standard interpretations: small effects from d=0.2, medium from d=0.5 and high from d=0.8.[38] In single practices, the staff ratings were compared with the leader's assessment. In practices with more than one owner (group practices), each leader's self-rating was compared with the respective ratings of the practice personnel, who were asked to rate the leadership team of the practice, not stratified by individual leaders. This approach was chosen because practice owners of German practices typically work as a leadership team. In addition, the ratings of the transformational and transactional leadership scales were compared stratified by practice type (single vs group and teaching vs non-teaching practices) using the Kruskal-Wallis tests because the data for practice comparisons did not satisfy the conditions for parametric tests.

RESULTS

Population

The baseline data of the IMPROVE*job* study included 366 participants from 60 practices, consisting of 84 practice leaders, 28 employed physicians and 254 practice assistants. The mean age of the participants was 44.4 years, with a mean of 54.3 years for practice leaders, 44.8 for employed physicians and 41.0 for practice assistants. Among the practice assistants, 99.6% were women, as were 76.6% of the employed physicians and half of the practice leaders (52.4%). Most practice leaders worked full-time (90.5%), as did about a quarter of the employed physicians (28.6%) and 41.5% of the practice assistants (see table 1). The details on the socio-demographic descriptions are published.[30]

On average, practice leaders had been accredited for 26.6 years and licensed for the statutory health insurance for 16.4 years. Seven (25%) of the employed physicians were in GP training. Practice assistants had graduated on average 19.9 years ago, while 7.5% were still in training. Of the 60 practices, 21 (35%) were single and 39 (65%) were group practices; of these, 34 were teaching (57%) and 26 (43%) were non-teaching practices. On average,

Table 1 Socio-demographic description of participants at baseline[30]

Variable	Total sample N=366	Practice leaders N=84	Employed physicians N=28	Practice assistants N=254
Female, %	87.1	52.4	78.6	99.6
Age in years, mean (SD)	44.4 (12.8)	54.3 (6.2)	44.8 (9.8)	41.0 (13.0)
Years in current practice, mean (SD)	10.0 (9.1)	15.3 (8.4)	3.9 (5.4)	8.8 (8.9)
Working full-time, %	52.0	90.5	28.6	41.5

practices were in the same location for 20.4 years (SD=14 years).

Leadership

The transactional and transformational leadership scales showed a high internal consistency with Cronbach's α=0.74–0.93 for the staff members' assessment and Cronbach's α=0.72–0.87 for the leaders' assessment. For negative leadership, the scales showed a sufficient internal consistency for staff members' (Cronbach's α=0.73–0.80) but not for leaders' assessments (Cronbach's α=0.47–0.68).

The mean results of the FIF were within the one SD range of the reference population.[18] Based on raw values, employed physicians rated their leaders consistently better than practice assistants and better than the leaders themselves for some items. While practice assistants rated their leaders more poorly than the practice leaders in raw values, reference t-values showed only minor differences. The details are outlined in table 2.

The LMX-7 scale showed an internal consistency of Cronbach's α=0.88 for staff members (practice assistants)

and α=0.71 for leaders. Both groups showed a high relationship quality, scoring 28 for practice leaders and 26 for practice assistants. As the seventh question was missing for employed physicians, they were excluded from the analysis. However, the sum score of the remaining six questions also showed a high score of 24.9 out of 30. The details are shown in table 2.

180° leadership feedback

Practice leaders self-rated their leadership skills slightly better than their staff for all dimensions except for 'management by exception'. There were no statistically significant differences for negative leadership. For transactional leadership, goal setting differed significantly with a low effect size (p=0.009, d=0.30). Leaders' scores on transformational leadership were significantly higher than the scores of the teams, with the dimension for innovation reaching the strongest effect size (p≤0.001, d=0.69), followed by individuality focus with a medium effect size (p≤0.001, d=0.50). The scores for team spirit and being a role model were slightly lower, but significant. The

Table 2 Leadership assessment by employment group: main scales (in bold) and dimensions (LMX values can range from 7 to 35, FIF scales from 1 to 5)

	Practice leaders (N=84)				Employed physicians (N=28)				Practice assistants (N=254)			
	M	**SD**	**T***	**n**	**M**	**SD**	**T***	**N**	**M**	**SD**	**T***	**n**
Transformational leadership	**3.9**	**0.6**	**45**	**84**	**3.9**	**0.7**	**56**	**27**	**3.5**	**0.8**	**52**	**237**
Innovation	4.2	0.6	49	84	4.0	1.0	55	28	3.7	0.9	52	247
Team spirit	4.1	0.7	49	84	3.8	1.0	54	28	3.6	1.1	52	251
Performance development	3.6	0.8	44	84	4.1	0.7	57	27	3.5	1.0	51	247
Individuality focus	3.9	0.7	47	84	3.7	1.0	54	28	3.5	1.1	53	249
Providing a vision	3.5	0.9	45	84	3.6	0.9	55	28	3.2	1.1	51	245
Being a role model	4.1	0.6	45	84	4.0	0.8	55	27	3.7	1.0	52	246
Transactional leadership	**3.4**	**0.7**	**47**	**83**	**3.5**	**0.7**	**54**	**27**	**3.2**	**0.8**	**50**	**244**
Goal setting	3.5	0.7	44	83	3.7	0.9	56	27	3.1	1.0	50	246
Management by exception	3.3	0.8	51	83	3.4	0.8	52	27	3.3	0.9	51	245
Negative leadership	**1.5**	**0.5**	**51**	**83**	**1.5**	**0.6**	**45**	**28**	**1.7**	**0.7**	**47**	**248**
Laissez-faire	1.6	0.6	52	83	1.6	0.8	45	28	1.7	0.8	46	249
Destructive	1.4	0.5	51	83	1.4	0.6	46	28	1.6	0.7	48	248
LMX-7	**28.1**	**2.6**	–	**81**	n/a	n/a	–	n/a	**26.7**	**4.8**	–	**222**

*Reference t-values range from 0 to 100, as defined by Rowold and Poethke 2017.
FIF, Fragebogen für integrative Führung; LMX, leader-member exchange.

Table 3 Comparison of leaders' self and staff ratings (n=84 leader-team pairs): main scales (in bold) and dimensions

	Practice leaders		Practice staff		Paired t-test		
	M	SD	M	SD	t (df)	P value	d
Transformational leadership	**3.9**	**0.5**	**3.6**	**0.6**	**3.721 (82)**	<0.001	**0.41**
Innovation	4.2	0.6	3.8	0.6	6.359 (83)	<0.001	0.69
Team spirit	4.1	0.7	3.8	0.7	3.462 (82)	0.001	0.38
Performance development	3.6	0.8	3.7	0.6	−0.208 (83)	0.836	–
Individuality focus	3.9	0.7	3.5	0.6	4.633 (83)	<0.001	0.50
Providing a vision	3.5	0.9	3.3	0.8	1.592 (82)	0.115	–
Being a role model	4.1	0.6	3.8	0.6	2.833 (82)	0.006	0.31
Transactional leadership	**3.4**	**0.6**	**3.3**	**0.5**	**1.291 (81)**	0.200	–
Goal setting	3.5	0.7	3.2	0.6	2.681 (81)	0.009	0.30
Management by exception	3.3	0.8	3.4	0.6	−0.470 (82)	0.640	–
Negative leadership	**1.5**	**0.4**	**1.6**	**0.4**	**−1.744 (82)**	0.085	–
Laissez-faire	1.6	0.6	1.7	0.5	−1.563 (82)	0.122	–
Destructive	1.4	0.5	1.6	0.5	−1.514 (82)	0.134	–
Leader-member exchange	28.1	2.6	26.8	3.5	3.275 (79)	0.002	0.37

main scale for transformational leadership also showed a significant difference with a medium effect size (p≤0.001, d=0.41). The details are outlined in table 3.

Transformational and transactional leadership by practice type

The Kruskal-Wallis test was applied to analyse for differences in leadership by practice types. It showed slight but non-significant differences in the raw values between practice types (single vs group, teaching vs non-teaching practices), for example, slightly higher ratings for transformational leadership in single and non-teaching practices. These slight differences persisted when using reference t-values. For details, see table 4.

DISCUSSION

Using a 180° feedback approach of leadership in GP practices, this study showed good relationships between leaders and staff with low levels of negative leaderships. Practice staff rated their leaders slightly higher on all transformational and transactional dimensions than the 234 German leaders and 713 employees from the FIF questionnaire reference population.[18] Also, agreement between GP leaders and staff was higher than in a study of 1137 German hospital employees (315 leaders, 822 staff members) from different occupational groups (eg, physicians, nurses, administration, information technology), which used the same methodology.[32] Interestingly, hospital and GP leaders rated themselves approximately similar.[32]

Table 4 Comparison of leadership assessments by practice type: single versus group practices and teaching versus non-teaching practices

	Single (n=21)			Group (n=39)			Non-teaching (n=26)			Teaching (n=34)		
	M	T	n	M	T	N	M	T	n	M	T	n
Practice leaders												
Transformational	4.0	47	21	3.9	45	63	3.8	43	37	4.0	47	47
Transactional	3.4	47	21	3.4	47	62	3.3	45	37	3.4	47	46
Negative	1.5	51	21	1.5	51	62	1.6	53	37	1.5	51	46
LMX-7	28.8	–	20	27.9	–	61	27.5	–	36	28.6	–	45
Practice staff												
Transformational	3.7	54	67	3.6	53	212	3.5	52	117	3.6	53	162
Transactional	3.4	53	67	3.3	51	212	3.3	51	117	3.2	50	162
Negative	1.7	47	70	1.7	47	212	1.7	47	117	1.6	46	165
LMX-7	27.5	–	61	26.3	–	190	25.6	–	105	27.3	–	146

LMX-7, leader-member exchange.

The benefit of 180° and 360° feedback is shown in studies from various settings. In a sample of more than 2000 US military leaders, 360° feedback (leaders, subordinates, peers) was identified as a good predictor for promotions.[39] This is in line with a 180° feedback (leaders, employees) study among 396 managers from different departments of an international airline: congruence between managers self-ratings and employees ratings predicted managerial behaviour such as innovation, decision-making, leading and motivation.[40] In a sample of 1190 physicians from the USA and Canada, the 180° feedback approach, which is also called multi-rater assessment, provided a more realistic picture of leader-team situations as shown by an improvement in a leadership teamwork index.[36] In our study, leadership ratings of employed physicians were markedly higher in most dimensions than those by non-physician practice personnel. This likely reflects that employed physicians are much closer to their physician leaders regarding training, roles and duties compared with practice assistants. In addition, practice assistants do not have the perspective to become physician leaders themselves, which implies a fundamentally different perspective. This finding is in line with a 2010 review identifying several studies which showed that staff members who perceive themselves as more similar to the leader give better performance ratings.[41] This effect was shown, for example, among 406 rater and 396 ratees in an insurance company.[42]

Multi-rater assessments can provide the basis for analysing and at best improving the psychological well-being at workplaces by a better mutual understanding of leaders and staff.[7 41 43] A 2016 study of 110 insurance managers and their teams showed higher job satisfaction with higher mutual ratings. Job satisfaction among employees (assessed on a 1–5 scale) was lowest when leaders rated their leadership skills higher than their subordinates did (mean 3.89 of 5 compared with 4.53 of 5 in agreement).[44] Rowold and Poethke who developed the FIF questionnaire conclude from their studies that leaders can learn to adapt when receiving the leadership ratings as feedback. In addition, they recommend implementing, for example, regular team meetings and improving leadership skills through training.[18] Results from the DIALHS (District Innovation and Action Learning for Health Systems Development) collaboration from South Africa point at the need for accountability strategies such as standard operating procedures, facility audits and target setting.[45] While other studies followed this approach to share the assessment results with the ratee, we abstained from this because previous studies in the medical field showed mixed reactions. In a 2005 study, 15 family physicians rated multisource feedback extremely different, from negative to positive. This evaluation was affected by the perceived usefulness, accuracy and credibility.[35]

Using the LMX questionnaire, a 2008 study with 200 nurses from six smaller and larger hospitals showed positive associations of high mutual relationship scores with enhanced commitment, reduced staff turnover and better organisational behaviour.[46] Also, positive effects on employees' health and well-being are described in association with good relationships between leaders and employees. Lower levels of emotional exhaustion were associated with higher leader-member exchange quality in a sample of 343 employees working in the German healthcare sector after 11 months.[47] In addition, a hierarchical regression model showed that the LMX was a good predictor for the health of 412 employees in health and social services in Germany.[48] Compared with the LMX reference values based on 113 participants, our study showed an overall better relationship quality between practice leaders and practice assistants (mean value of 28.1 of 35 for practice leaders and 26.8 for practice assistants vs 22.9 in the LMX reference population).[34] Higher scores in the practice setting are likely influenced by the fact that GP leaders recruit personnel themselves, while personnel recruitment and placement in larger institutions is not necessarily in the hands of the direct team leaders.

Strengths and limitations

Novel for the German GP setting, we investigated GP leadership in a large sample with analysis on practice level. Our data provide leadership ratings for each solo practice leader, but not for each group practice leader, as we had asked staff to rate their leadership team to reflect current small team leadership situations. LMX data were missing for one of seven questions for the small number of employed physicians. However, the analysis of the available data yielded a high relationship quality with leaders like the results for practice assistants. A selection bias cannot be excluded as participating practices might have had a greater interest in the topic.

Conclusion and practical implications

Overall, our data from the IMPROVE*job* study show trustful relationships between GP leaders and their staff. Future GPs' training should enable GP leaders to implement goal-setting, innovation and individuality focus more effectively. Our results support recent calls for leadership workshops on every level of the medical training for strengthening the GP and other health services workforce.

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