

BMJ Open How to increase the attractiveness of undergraduate rural clerkships? A cross-sectional study among medical students at two German medical schools

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ABSTRACT

Objectives While literature provides substantial evidence that undergraduate rural clerkships may contribute to attract medical students to rural careers, so far little is known about how to convince medical students to choose rural teaching sites for their clerkships, which is usually optional. Thus, this study aimed to investigate students' preferences and perceptions regarding different rural teaching and clerkship formats, important side conditions and suitable communication strategies to promote rural clerkships.

Design Cross-sectional study based on a quantitative survey among medical students in advanced study years.

Setting Two German medical schools (Leipzig and Halle-Wittenberg).

Participants Medical students in third to fifth year (of six).

Results Response rate was 87.1% with n=909 analysable questionnaires. Participants' mean age was 25.0 years and 65.2% were women. For 97.9% of the students completing some kind of rural clerkship was imaginable, for 90.8% even participation in a rural clerkship of 4 weeks and longer. Nearly half of the students (48.0%) specified that a rural clerkship 4 weeks and longer was 'absolutely imaginable'. Younger age, having grown up in a rural or small-town region, being able to imagine future working in a small-town or rural area, and general practice as favoured, or at least conceivable career option were independently associated with a higher willingness to complete longer rural clerkships. Financial and organisational issues including remuneration of the clerkship, cost absorption for travelling and accommodation, and accessibility by public transport were the most important side conditions to increase the attractiveness of rural clerkships. Experience reports by fellow students, social media and informational events were stated to be the most suitable ways to advertise rural teaching offers.

Conclusions The majority of the students are open-minded regarding even longer rural clerkships. This study adds new insights into measures that should be taken to convince them to actually chose this option.

INTRODUCTION

As with many other countries worldwide, Germany is currently faced with a dwindling

Strengths and limitations of this study

- Given the known positive impact of undergraduate rural experiences on rural career choice, this study provides new insights into measures that are useful to convince medical students to choose rural teaching sites for their clerkships, which is usually optional.
- The presented results are suitable to guide the implementation and development of undergraduate rural programmes as well as a prioritisation of important side conditions.
- The sufficient sample size, high response rate, participation of medical students from several years of study and inclusion of two medical schools situated in different federal states enhance the generalisability of the findings.
- As this cross-sectional study is partially based on declarations of intent, further research is needed to confirm that the concluded measures actually lead to an increased participation in rural clerkships.

supply of physicians in rural and small-town areas.¹⁻⁴ The reasons are complex and include, for example, demographic changes, a general trend towards urbanisation, infrastructural problems in rural areas, changed values among young physicians regarding the reconciliation of work and family life, as well as general recruitment problems in some specialties, particularly in general practice.^{3,5} There is an urgent need to take measures to attract a new generation of physicians to work in rural and small-town areas.

On the part of the medical schools, a lack of practical rural experiences and positive role models practising rural medicine during undergraduate medical education may have contributed to the low interest in rural workplaces among graduates.^{1,6,7} Subsequently, a number of medical schools worldwide have established different kinds of rural programmes offering, for example, rural

clerkships, electives, on-site lectures and longitudinal curricula.^{1 8-10} It has been demonstrated in numerous studies that the exposure to rural curricula and particularly practical experiences in rural healthcare actually have the potential to positively influence medical students' future career decisions.^{1 8 9} To facilitate the implementation of new rural curricular offers, early involvement of students in the design process has been recommended.¹¹

In Germany, undergraduate medical education takes 6 years and is divided into preclinical study section (basic science, years 1 and 2), clinical study section (clinical science, years 3–5) and a final year including three 4-month full-time clinical rotations (year 6). For detailed information regarding German undergraduate medical education, please refer to Chenot.¹² During the last years, some German medical schools have implemented rural teaching projects or rural programmes as well. The nature and extent of these programmes is very different, ranging from rural summer schools and the organisational and financial support of specific rural general practice clerkships for subgroups of students to a general on-site teaching at rural branches of medical schools.¹³⁻¹⁷ As in many other countries, participation in undergraduate rural teaching offers is usually optional for the students.

Funded by the German Federal Ministry of Health, the Universities of Leipzig and Halle-Wittenberg are currently developing and establishing a new rural curriculum named 'MiLaMed'. The programme's aim is to provide rural teaching content longitudinally during the whole course of studies and to specifically promote clerkships in selected collaborating rural and small-town regions of the German federal states of Saxony and Saxony-Anhalt. In order to reach as many students as possible, the new teaching content is integrated into the regular compulsory and optional compulsory curriculum and all kinds of clerkships during undergraduate medical education will be promoted, regardless of specialty or setting (outpatient care or hospital). This is a particularity of the MiLaMed project, as most undergraduate rural programmes in Germany are focused only on general practice. However, the completion of rural clerkships remains optional in our programme. Students freely decide whether to complete a certain clerkship at a rural or an urban teaching site. Consequently, it is of particular importance to create conditions that are suitable to attract students to the rural offers.

As mentioned, there is substantial international evidence regarding the positive impact of undergraduate rural placements on rural career considerations and rural practice after graduation. However, although the choice of rural teaching sites for clerkships is voluntary for medical students in many countries, less is known about how to convince them to choose this option. Thus, the aim of this study was to find out which conditions are important for encouraging current medical students to choose rural clerkships, which kinds of rural clerkships and teaching formats are preferred, and which communication channels are suitable to promote these offers. Furthermore,

it was of interest if there are different subgroups of students with different needs, for example, depending on regional background, career preferences or gender. The results were used to directly guide the development of the MiLaMed project and may also help to develop undergraduate rural initiatives in other regions and countries.

METHODS

Sampling and design

The present analysis is based on a cross-sectional quantitative survey among third to fifth year (of six) medical students, which was conducted in May and June 2019 at two German medical schools, Leipzig and Halle-Wittenberg. Students were asked to complete the paper-based anonymous questionnaire on a voluntary basis during academic courses. All students were comprehensively informed about the survey and its purpose.

Questionnaire

The questionnaire was self-developed on the basis of existing literature in a multilevel revision process involving social scientists, medical teachers and medical students. Prior to the survey, the questionnaire was pretested with five medical students representing the target group. To ensure face validity, comprehensibility and suitability, we followed the method of Concurrent Think Aloud in addition to general feedback by the participants. Students were asked to verbalise every action or thought while completing the questionnaire. The resulting think aloud protocols were analysed and led to minor modifications and amendments in the final version of the questionnaire. Besides relevant sociodemographic variables, the questionnaire contained items assessing career plans and previous experience with rural topics at medical school, students' readiness to take part in clerkships and teaching formats of various lengths at a rural teaching site, the potential of various side conditions to increase the attractiveness of rural clerkships, and the potential of various ways advertising could be used to convince medical students to take part in rural teaching offers. An English translation of the questionnaire items analysed in this paper is given in online supplemental file 1.

Statistical analysis

Data were analysed using IBM SPSS Statistics V.25 for Windows. Frequencies were presented as %_{valid} ($n_{\text{absolute}}/n_{\text{valid}}$), considering missing values for single items. Continuous variables were presented as mean±SD. Besides descriptive analysis, χ^2 test was used to compare frequencies between groups. Differences in central tendency were compared with Mann-Whitney U test. Additionally, multivariable binary logistic regression was performed to reveal variables independently associated with the definite willingness to take part in a rural clerkship of 4 weeks or longer (dichotomous variable created based on the respective items). Considering the lack of a pre-existing theoretical model, we chose stepwise forward likelihood

Table 1 Sample characteristics

Variable	n valid	n (%)*
Age (years, mean±SD)	903	25.0±3.5
Female	906	591 (65.2)
In a relationship	894	520 (58.2)
Has children	870	66 (7.6)
Current year of study (of six)	905	
... third year		195 (21.5)
... fourth year		226 (25.0)
... fifth year		484 (53.5)
At least one parent with higher education degree	899	701 (78.0)
Being a physician's child	901	233 (25.9)
Family or friends in general practice	901	244 (27.1)
Mainly grew up in:	901	
... big city		315 (35.0)
... small town		288 (32.0)
... rural area		298 (33.1)
Pre-existing concluded education in a medical vocational education	898	213 (23.7)
Can imagine future working ...	909	
... in a small-town		842 (92.6)
... in a rural area		402 (44.2)
Can imagine future living ...	909	
... in a small-town		611 (67.2)
... in a rural area		466 (51.3)

*Unless otherwise indicated.

ratio (LR) model building. For model building, we considered all relevant variables with univariable group differences on a significance level of $p < 0.20$ as a screening criterion (as far as there was no high correlation or content-related redundancy with another variable). In general, statistical significance was assumed for a probability of error of $p < 0.05$.

Patients and public involvement

Neither participants nor the public were involved in the design or conduct of this study.

RESULTS

Questionnaire response and sample characteristics

Out of 1044 medical students of both medical schools who were asked to take part in the study, 909 returned duly completed questionnaires, corresponding to a response rate of 87.1%.

Potentially relevant sociodemographic characteristics of the participating students as well as attitudes regarding future working and living in a rural or small-town area are displayed in [table 1](#). Regarding their current career

preferences, 53.9% (489/907) stated that general practice was an imaginable option, while 9.3% (84/907) declared this as their favoured specialty. Working in ambulatory care was conceivable for 58.4% (530/908) and favoured choice of 37.6% (341/908). Working self-employed in their own practice was an option for 60.4% (548/908) and favoured by 30.4% (276/908). The majority of students (75.2%; 682/907) reported that they have been already confronted with topics of rural medical care during their medical studies.

Willingness to take part in different rural teaching formats

An overview regarding the willingness among medical students in our sample to take part in different types of teaching formats and clerkships of various lengths in rural regions is given in [figure 1](#). Teaching formats are sorted in a descending order by frequencies of positive consideration. Altogether, 97.9% (880/899) of the participants stated that they could basically imagine taking part in at least one of the teaching formats presented for selection in our questionnaire ('rather imaginable' or 'absolutely imaginable' was stated for one or more of the respective items). For 90.8% (813/895) participation in a rural clerkship of 4 weeks and longer was conceivable ('rather imaginable' or 'absolutely imaginable' was stated for one or more of the four respective clerkship formats). Nearly half of the students (48.0%; 430/895) specified that a clerkship in a rural area of 4 weeks and longer was 'absolutely imaginable'.

We performed multivariable binary logistic regression to characterise the subgroup of those students with a high willingness regarding rural clerkships of 4 weeks and longer ('absolutely imaginable'). The results are presented in [table 2](#). Our analysis revealed that younger age, having grown up in a small-town or a rural area (vs big city), being able to imagine working in a small-town or rural area (vs big city) in the future and general practice as an imaginable or favoured career option (vs no option) are significantly positively associated with reporting a clerkship of 4 weeks or longer at a rural site being 'absolutely imaginable'.

Potential of different communication methods to advertise for rural clerkships

The participating students' assessments of different communication types regarding its potential to advertise for rural clerkships are displayed in [figure 2](#) (sorted in a descending order by means). The five most important methods comprise reports of rural experience by fellow students, advertisement via social media, informational events, organised group trips to a region ahead of the decision for a clerkship and advertisement through the respective medical school's official online student portal. Explorative subgroup comparisons regarding the potential of different means of communication depending on the variables sex, age and having grown up in a small-town or rural area revealed no differences of serious practical relevance. Women tended to assess slightly more positive

In which courses/clerkships in a rural region can you imagine taking part to be the most likely?

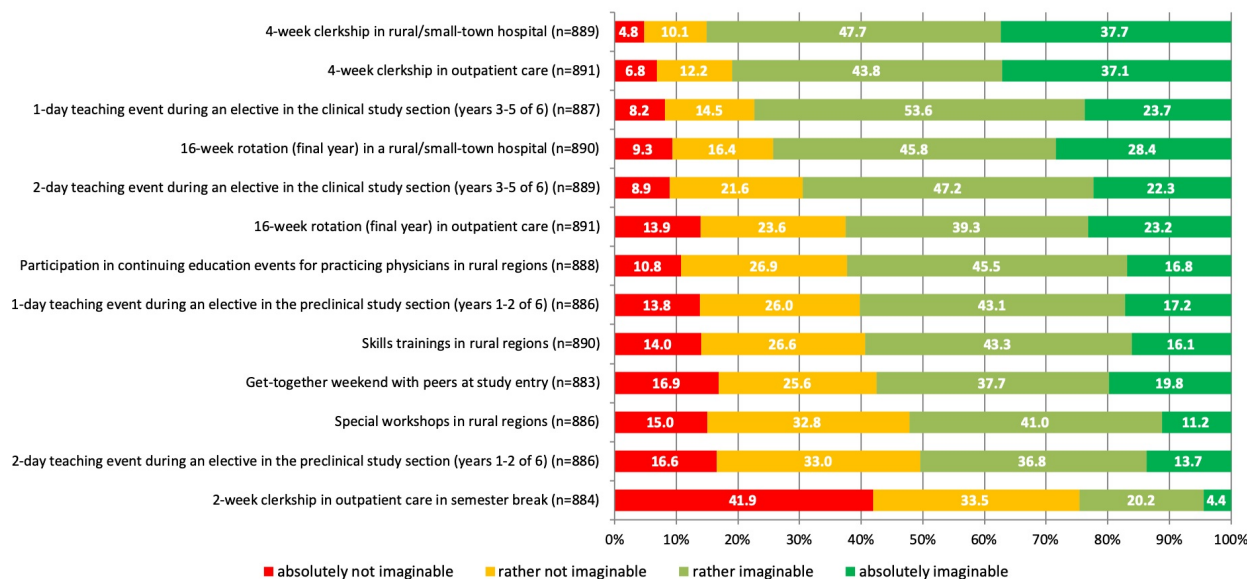


Figure 1 Medical students' willingness to take part in different types of teaching formats in rural regions (sorted in descending order by relative frequencies).

in general and students with rural or small-town background showed a slightly higher interest in informational events (data not shown).

Potential of various side conditions to increase the attractiveness of rural clerkships

An overview on the participating students' assessment of various side conditions regarding its potential to increase the attractiveness of rural clerkships is given in figure 3. The results are sorted in a descending order by relative

frequencies of 'medium' to 'very strong' increase in attractiveness. The most important side conditions for medical students in our sample were remuneration for rural clerkships, reimbursement of travel expenses, accessibility by public transport, free accommodation and a physician mentor giving feedback on-site.

Participants were additionally asked which characteristics of a rural region itself might increase the attractiveness of a rural placement there (again a scale from 0

Table 2 Logistic regression analysis predicting definite willingness to take part in a rural clerkship of 4 weeks or longer (N=861) (at least one or more of the four respective clerkship formats was stated to be 'absolutely imaginable' vs 'rather'/'rather not'/'not at all imaginable')

Variables included in the model (stepwise forward likelihood ratio LR)	Definite willingness to participate in a rural clerkship of 4 weeks or longer (Nagelkerkes R ² =0.142)	P value
	OR (95% CI)	
Age (years)	0.96 (0.92 to 0.997)	0.037
Mainly grew up in:		
... small town (vs big city)	1.60 (1.13 to 2.27)	0.008
... rural area (vs big city)	2.70 (1.90 to 3.83)	<0.001
Future work in small-town or rural area is conceivable (vs not conceivable)	2.76 (1.28 to 5.95)	0.009
General practice is:		
... an imaginable career option (vs no option)	1.80 (1.30 to 2.47)	<0.001
... the favoured career option (vs no option)	2.70 (1.50 to 4.86)	0.001
Working in ambulatory care is:		
... an imaginable career option (vs no option)	1.65 (0.70 to 3.87)	0.249
... the favoured career option (vs no option)	2.38 (0.99 to 5.73)	0.054

Further variables considered (due to univariable differences at $p \leq 0.2$), but not included in the model during the stepwise forward LR process: women (vs men), at least one parent with higher education degree (vs not), working self-employed (own practice) in the future is 'an imaginable career option' (vs 'no option')/ is 'the favoured career option' (vs 'no option')

We are aiming to attract more medical students to clerkships in specific rural areas of Central Germany in the future. Which methods of communication would most likely appeal to you?

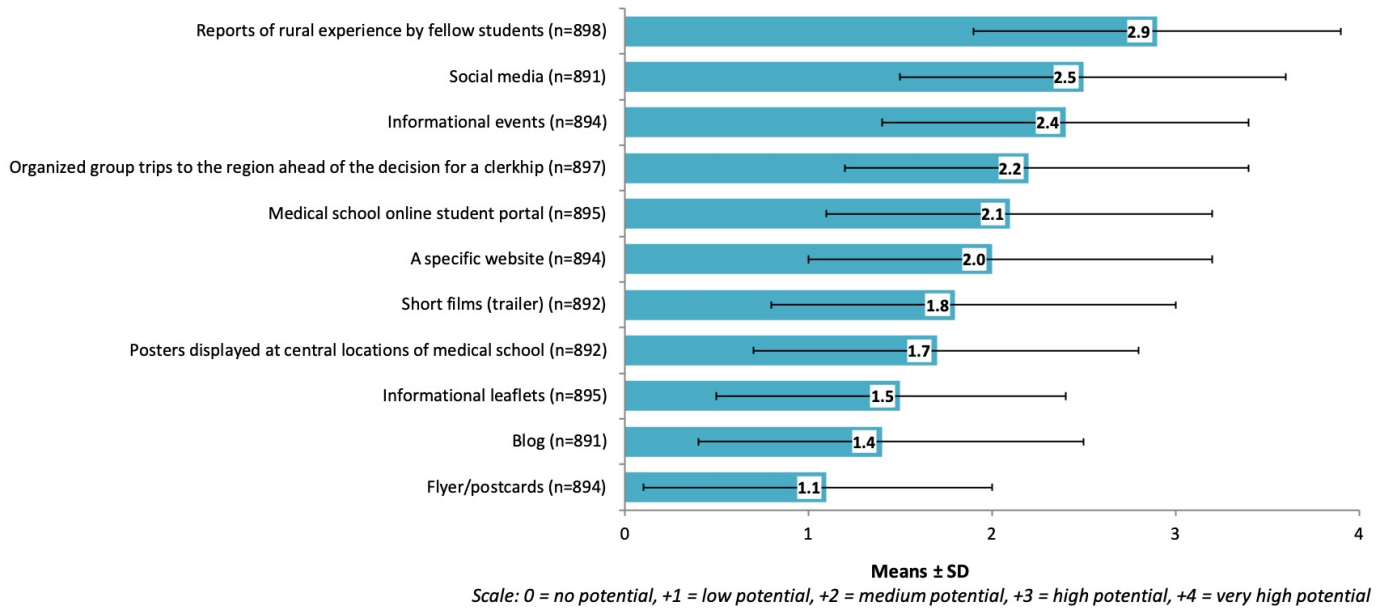


Figure 2 Medical students’ assessment of the potential of different communication methods to advertise for rural clerkships (sorted in descending order by means).

‘no effect on attractiveness’ to 4 ‘very strong increase in attractiveness’ was used). A scenic landscape was stated to have the most impact (mean±SD: 3.0±1.0; n=886), followed by interesting cultural events (2.7±1.1; n=890), interesting sports offers (2.6±1.1; n=891) and interesting offers regarding wellness and relaxation in the region (2.2±1.2; n=888).

Explorative subgroup comparisons regarding the potential of different side conditions depending on the variables sex, age and having grown up in a small-town or

rural area showed a slightly positive correlation between higher age and the importance of on-site child care and a slightly negative correlation between higher age and the importance of common accommodation and leisure time with peers. Furthermore, women tended to assess all items slightly more positively (data not shown). In summary, we found no subgroup differences of serious practical relevance.

A content analysis of the additional open-ended question ‘Which other aspects not mentioned in the

To what extent would the following side-conditions increase the attractiveness of a clerkship in a rural region for you? (respectively, if studies are advanced: could have increased)

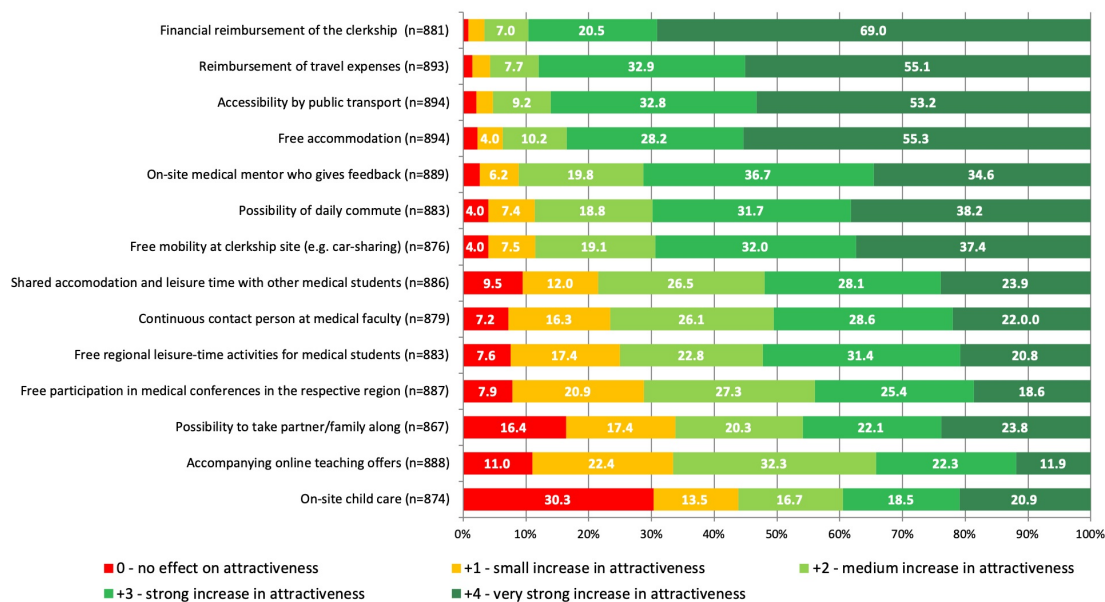


Figure 3 Medical students’ assessment of the potential of various side conditions to increase the attractiveness of rural clerkships (sorted in descending order by relative frequencies).

questionnaire would increase your willingness to participate in rural teaching events/clerkships?’ revealed no further insights. Students’ answers underlined once more the importance of financial support, free accommodation, access to (public) transport and a well-founded supervision by teaching physicians on-site.

DISCUSSION

Summary of the main findings

The overwhelming majority of the students in our sample were basically open-minded about completing some kind of rural clerkship and even participation in rural clerkships of 4 weeks and longer was imaginable for most participants. Four-week clerkships during the semester break were the most preferred rural teaching format. Younger age, having grown up in a rural or small-town region, being able to imagine working in a small-town or rural area in the future, and general practice as a favoured or at least a conceivable career option were independently associated with a higher willingness to complete longer rural clerkships. From the medical students’ perspective particularly financial and organisational issues including remuneration of the clerkship, cost absorption for travelling and accommodation, and accessibility by the public transport were the most important side conditions to increase the attractiveness of rural clerkships. These were followed by the wish to have an on-site mentor giving feedback. Experience reports by fellow students, social media and informational events were stated to be the most suitable ways to advertise for rural clerkships. We found no indications for subgroups with relevantly different needs.

Data interpretation and comparison with the literature

In this study, nearly all students reported that they could imagine some kind of clerkship, social activity or advanced medical training in a rural region. Nevertheless, there were substantial differences regarding different teaching formats with a clear preference for 4-week clerkships and particularly low interest in a 2-week clerkship in outpatient care during semester break. While 9 out of 10 students stated that also a longer rural clerkship of 4 weeks and more is at least basically conceivable, this was even ‘absolutely imaginable’ for half of the participants. This is a very promising result, as it has been shown that particularly longer rural placements have positive effects on medical students’ attitudes and career intentions regarding medical practice in rural areas, and may increase the number of graduates entering rural practice.^{1 18 19}

According to our findings, appropriate side conditions and advertisements have serious potential to additionally raise the attractiveness of rural clerkships for many students. In synopsis, our results imply that a substantial number of students might be convinced to participate in rural clerkships, if the right measures were taken. In a previous study among graduates from the medical school in Leipzig, about one third of all participants reported

having gained any kind of rural experience during undergraduate education, and half of those, who had finally entered general practitioner careers.²⁰ Considering the still ongoing lack of graduates entering rural practice, more students should gain respective experience, preferably in the course of longer clerkships.

We found that younger age, having grown up in a rural or small-town region, being able to imagine future rural practice and favouring or at least considering a career in general practice was associated with higher willingness to complete longer rural clerkships. Except for younger age these associated variables have been also described to be predictors of rural practice after graduation.^{1 10 21–25} Thus, our findings imply that particularly those students with the highest probability for future rural practice have the greatest interest in longer rural clerkships during undergraduate education. This subgroup could be targeted most intensely to strengthen their interest and maintain it over the course of their studies. A targeted encouraging of students with rural backgrounds who are undecided as to where they would like to work in the future to participate in a rural programme has also been suggested by Barthen *et al.*²⁶ The association of younger age and higher willingness for longer rural undergraduate experiences in our study was new and might be promising as, in contrast to our findings, the outcome of ‘ultimately working rurally after graduation’ was associated with older age in previous studies.²⁷ A possible explanation might be seen in a higher flexibility and independence of younger students. Wilhelmi *et al* found in qualitative study including students as well as postgraduate young doctors that depending on life stage different factors were relevant regarding potential rural practice, like cultural offerings and the quality and accessibility of educational structures for the family.²⁸

Regarding the importance of different side conditions that might increase the attractiveness of rural clerkships our results imply that students’ ratings are largely homogeneous, as we couldn’t find relevant differences depending on sex, age and regional background. Consequently, the side conditions rated as most important in our study would meet the needs of most students. Our findings particularly underline the importance of remuneration as well as cost absorption for accommodation and transport. The fact that students might be afraid of additional costs for travelling and accommodation with regard to rural clerkships has been emphasised previously.¹⁶ Considering the usually limited financial resources of students, the relevance of cost neutrality of rural clerkships seems absolutely comprehensible and should be addressed by targeted financial support. Another important factor increasing the attractiveness of rural clerkships was the accessibility of the teaching site by public transport, probably due to limited availability of a personal vehicle. As not all German rural teaching sites are accessible by public transport, unconventional measures such as the possibility of clerkship-related car-sharing or car rental might help to overcome this barrier.

This would also improve on-site mobility and enable daily commute by the students, which were highly rated side conditions in our study as well.

In our sample, besides financial and organisational aspects, the students' strong desire for a physician mentor giving feedback during the clerkship has been noted. In a previous study assessing students' needs regarding an optional rural teaching concept with a specific focus on general practice, about one-third of the participants expressed the wish for regular and detailed feedback from the teaching physician.²⁶ Regarding possible effects on future rural career choice, supportive mentoring and positive rural physician role models have been shown to be a motivating factor.^{16 29 30} Rural physicians who are training medical students should be aware of the explicit relevance of this issue and should be trained in didactic and mentoring skills. Furthermore, it should be pointed out to the students that mentoring and the possibility to actively participate in patient care during clerkships are often particularly good at rural teaching sites due to small group learning environment, close relationships to medical teachers and more opportunities for hands-on experience.^{31 32}

With regard to characteristics of rural regions themselves our results indicate that especially the scenic landscape should be emphasised within communication strategies trying to convince students to apply for rural clerkships. While the results of Ross *et al* indicate a rather low interest of many students in exploring the rural region the clerkship is situated in,³³ other authors have underlined that accompanying activities may help to increase the awareness of rural life style issues and cultural and recreational opportunities in the region.¹⁹

Our results provide new insights regarding the potential of different communication strategies to attract medical students to rural clerkships. Again, the respective ratings of the participants were largely homogeneous. Field reports by fellow students, who have already completed a rural clerkship, as well as social media, were of particular importance and should be definitely addressed by undergraduate rural programmes. The general impact of peer influence on study-related decisions has been previously underlined in other fields, for example, regarding the participation in study abroad.³⁴ Social media marketing has been the focus of university communication only for a few years. However, its great potential in complementing a modern undergraduate medical education has been emphasised in a current review by Latif *et al*.³⁵ Interestingly, the potential of on-site events (informational events, organised excursions to the rural area) to advertise for rural clerkships was highly rated by the students in our sample. Consequently, in order to promote students' interest in rural clerkships, advertisements could be explicitly placed in introductory lessons, lectures and specific informational events at the university. The potential of advertisement through the commonly established ways of communication at German medical schools, such as the online student portal, specific project websites as

well as posters, was rated medium to low. Nevertheless, these ways of communication have potential to contribute to a comprehensive communication strategy. Print media like flyers and leaflets seem to be of minor importance for the students and could be neglected, and printing costs may be a factor particularly if small financial budgets are available.

Strengths and limitations

This study addresses an important issue of current health-care relevance in many countries worldwide and provides additional knowledge regarding the measures that should be taken to attract medical students to rural experiences. Given a substantial body of evidence regarding the potential of undergraduate rural exposure to positively contribute to the recruitment of physicians practising in rural areas, the present findings add new insights into which teaching formats, side conditions and communication strategies should be taken into consideration when aiming at convincing more medical students to decide for rural clerkships. The sufficient sample size, high response rate, participation of medical students from several years of study, and inclusion of at least two medical schools situated in different federal states enhance the representativeness of the findings. As a limitation it can be discussed that this study was cross-sectional and partially based on declarations of intent. Assessing factors increasing the attractiveness of rural clerkships and the ability to imagine completing a rural clerkship cannot be put on the same level with actually taking part in it. Consequently, further studies should examine if the measures concluded to be important based on our data actually lead to an increased participation in rural clerkships. A second limitation might be that at least some of our findings could be more or less specific for the German undergraduate education system (eg, certain teaching formats). The self-developed questionnaire might also be seen as a limitation by some readers. On the other hand, it should be noted that we asked for relatively simple information instead of complex psychological constructs. Furthermore, the questionnaire was thoroughly developed based on literature by an experienced interprofessional team including members of the target group. With additional consideration of the detailed pretesting procedure, we assume validity with regard to content. Finally, it should be stated that we did not adjust for multiple testing when analysing potential subgroup differences for the single items regarding ways of communication and important side conditions due to the explorative nature of these additional analyses.

Conclusion and implications for practice and research

The vast majority of current German medical students seems to be open-minded towards the participation in rural teaching formats and even longer rural clerkships. Younger students, who have grown up in a rural or small-town area, who consider general practice as a possible career option, and who are at least able to imagine future rural practice seem to have the highest interest in longer

rural clerkships. This subgroup might be targeted specifically when promoting rural teaching offers. Our results concerning students' perceptions regarding the potential of various side conditions to increase the attractiveness of rural clerkships enable a prioritisation of important accompanying measures when aiming to attract undergraduates to rural teaching sites. An explicit remuneration of rural clerkships, cost absorption for travelling and accommodation, good accessibility of the clerkship site (preferably by public transport), free on-site mobility and a physician mentor giving feedback during the clerkship are the most important side conditions. When advertising clerkships in rural regions, particularly the charm of the scenic landscape should be emphasised, which could be considered for example when selecting pictures. Targeted communication strategies to promote rural clerkships should especially include positive experience reports by fellow students, advertisement through social media and informational events at university and in rural regions. The homogeneity of students' attitudes in our study implies that a broad spectrum of students could be convinced to complete rural clerkships by offering similar side conditions and using similar communication strategies. The results of our study may guide the (further) development and implementation of undergraduate programmes to attract medical students to rural clerkships including a targeted communication strategy. Our findings are of interest for teachers in undergraduate medical education, medical mentors and preceptors in rural regions, people involved in curriculum development and political stakeholders. Further research might examine possible differences between countries and if the application of the measures concluded from our study will actually lead to increased numbers of students completing rural clerkships. We are looking forward to report on the further development, evaluation and outcomes of our MiLaMed project in future publications.

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Contributors SH contributed to questionnaire development, analysis and interpretation of the data, and drafting the manuscript. MN and SS contributed to questionnaire development and data acquisition and critically revised the manuscript. MB contributed to data interpretation and critically revised the manuscript. TF contributed to questionnaire development and data interpretation and critically revised the manuscript. TD contributed to conception and design of the study, questionnaire development, data acquisition, analysis and interpretation, and drafting the manuscript. All authors approved the final version of the article.

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Ethics approval The local ethics committee (Ethical Committee at the Faculty of Medicine of the University of Leipzig) confirmed in writing that no formal ethical approval was necessary for this study. There was no personally identifiable information in this social research study among students. All participants were

informed about the study's background, the survey was anonymous, and the statistically aggregated analysis of the data does not allow personal identification. Participation in the study was voluntary. Completing and returning the questionnaire was interpreted as consent to take part.

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