

# Status quo and perspectives of dermatology hospitals in Germany: spectra of health care and staff situation

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## Summary

**Background:** Inpatient care in Germany has been subject to change since the introduction of the DRG-based payment system. There have been no publications on important differentiating factors such as the spectrum of care and the staffing situation in dermatology.

**Methods:** Health care analysis of 115 dermatology hospitals in October 2019 using a structured survey questionnaire.

**Results:** On average, the spectrum of care included 31.0 % general dermatology, 33.6 % surgical dermatology, 15.6 % oncology, and 10.1 % allergology. The clinics had an average of 14 full-time positions and 3 part-time positions (university clinics: 23/5, non-university clinics: 9/2). The mean nationwide proportion of women in the physician teams showed the following distribution: postgraduate physicians 73.3 %, senior physicians 53.0 %, directors 20.0 %. The applicant situation of senior physicians and specialists was assessed as predominantly poor, that of residents as predominantly good. Worse applicant situations were present in non-university hospitals and in rural areas. The satisfaction of the medical directors with the current conditions of inpatient care showed a variable assessment independent of university hospital and non-university hospital status. However, the threat to inpatient care was predominantly assessed as low (71.6 %).

**Conclusions:** The overall situation of inpatient dermatological care can be classified as predominantly good. In addition, the majority of dermatology clinics provide a wide range of care with regard to the variety of indications. The general conditions, which in some cases are rated as inadequate, require further measures.

## Background

German dermatology clinics contribute significantly to the inpatient care of dermatological patients in Germany. The performance figures and volumes which were first reported in 2011 and 2015 [1] have largely stabilized at a high level until 2019 [2]. This applies to structural characteristics such as the number of inpatient beds as well as to outcome parameters such as treatment cases, case mix (CM), case mix index (CMI), mean length of stay, or the service completions of the dermatology departments in the hospital-internal comparison. To date, no publications have been available on important differentiating factors such as the range of care provided, the training situation and staffing levels. There was also a lack of up-to-date information on the perspective of hospital management.

Against this background, the present project had the objective of presenting the differentiating factors of the dermatological clinics with regard to service areas and personnel within a comprehensive inventory of inpatient dermatological care. The determinants for the thematic areas of care and the personnel situation were also to be characterized. This was done under the following questions:

1. What are the thematic focuses of dermatology clinics in Germany?
2. What continuing education offerings and what areas of differentiation are available?
3. What are the staffing levels of dermatology clinics in Germany and what are the expectations for the future staffing situation?
4. What risks and potentials do the directors believe will be significant in the coming years?

## Methods

Following previous studies of similar questions from 2011 and 2015, a current health care research analysis of 115 inpatient dermatology clinics was conducted in October 2019. The analysis is based on the written survey either paper- or online-based with a one-time reminder of the dermatology clinics in Germany. The cut-off date for the balances was December 31, 2018, and 2019 was referenced for further descriptive purposes. Further details have been published previously [2].

The annual performance data, which were the subject of another publication [2], were collected, as well as differentiations on current and future development, performance potential, staffing and the thematic orientation of the hospitals. The data were analyzed across the entire sample as well as by region and other characteristics of the hospitals (size, treatment data, distinction between university [UC] and non-university clinics [NUC]).

Furthermore, multivariate regression analyses were performed to determine the variables predicting satisfaction on the one hand and the subjective feeling of future threats on the other. Structural data such as settlement area and number of beds as well as performance data such as number of cases, CMI, CM, length of stay, research record and remuneration were investigated as possible influencing variables. A  $p$ -value  $< 0.05$  was considered statistically significant.

Data analysis was performed using SPSS version 25.0 from IBM (Armonk, New York) for Windows, with regional analyses based on a four-digit regional key by county type.

Because the present study involved the collection of aggregated secondary data without reference to individuals, it was not necessary to obtain an ethics vote.

## Results

### Characteristics of the participating clinics

Within the scope of the 2019 survey, 115 dermatology hospitals in Germany were contacted, of which 95 evaluable responses were received. Thus, the response rate is 82.6 % (UC: 100 %, NUC: 75.3 %). The 34 UC are divided into 32 from urban and 2 from rural areas. Among the NUCs, 42 are located in urban areas and 19 in rural areas. On average, the 95 clinics have 45 inpatient and 11 day-care beds (Table 1). The average occupancy rate of the skin clinics in 2018 was 84.7 % (inpatient) and 90.6 % (day-care). On average, 2,302 inpatient cases, 1,703 partly inpatient cases, and 13,313 outpatient cases were treated in 2018 (range inpatient: 104 to 7,813, partly inpatient: 0 to 11,800, outpatient: 0 to 58,600). The mean CM was 1,805.0 (range: 188 to 5,478), the mean CMI was 0.76 (range: 0.43 to 0.96), and the mean length of stay was 5.7 days (range: 3–21 days).

### Health care supply spectrum

In 2019, the dermatology hospitals of the German UC provided care across the entire spectrum of dermatological services, and this also applied to the NUC except for a few ( $< 5$  %) specialized clinics (Figures 1, 2). Overall, with varying focus, dermatosurgical cases (33.6 %) represented the largest proportion of care, followed by general dermatology (31.3 %) and oncology cases (15.6 %) (UC: 34.1 %/28.9 %/18.1 %; NUC: 33.3 %/32.6 %/14.1 %). Over the course of 2011 to 2019, only minor shifts occurred here overall.

### Dermatological functional areas

The dermatology departments had a wide range of subspecialties in both the UC and the NUC (Table 2). With the

**Table 1** Detailing the structural and performance characteristics of the dermatology hospitals studied (n = 95 clinics, of which complete data n = 93).

	Mean value	Median	Percentile 05	Percentile 95	Interquartile range	Minimum	Maximum
Number of inpatient beds (n)	45	42	16	94	78	10	153
Number of day-care beds (n)	11	10	0	24	24	0	45
Mean inpatient occupancy (%)	84.7	85.0	68.0	100.0	32.0	64.0	111.0
Mean partly inpatient occupancy (%)	90.6	97.5	0.0	150.0	150.0	0.0	160.0
Cases inpatient (n)	2,302	2,106	492	4,464	3,972	104	7,813
Partial inpatient case (n)	1,703	881	0	5,052	5,052	0	11,800
Cases outpatient (n)	13,313	10,200	111	39,549	39,438	0	58,600
Case mix*	1,805.0	1,745.0	431.0	3,078.0	2,647.0	188.0	5,478.0
Case mix index	0.76	0.76	0.63	0.90	0.27	0.43	0.96
Mean length of stay (days)	5.7	5.3	4.1	7.7	3.7	3.0	21.0

\*adjusted values omitting implausible values.

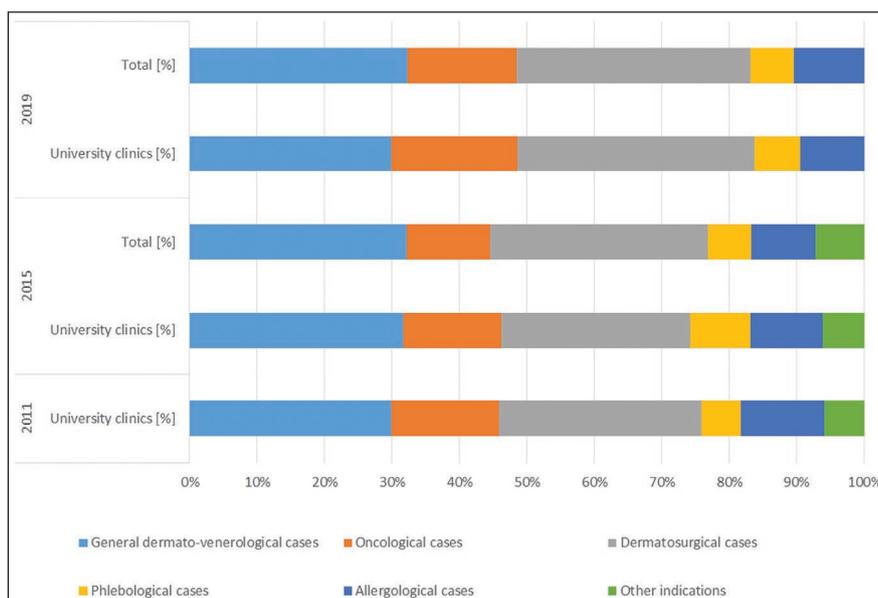
exception of a few special clinics, the areas of allergology, surgical dermatology, phlebology, phototherapy, dermatohistology, dermatooncology, medicinal tumor therapy, and laser medicine were generally staffed. Infectiology, venereology, wound care and pediatric care were also predominantly provided. Important additional specialty areas such as photopheresis and telemedicine as well as psychotherapy were also largely provided. A special feature was that the important laboratory areas of microbiology and mycology were largely covered, but to a considerable extent operated outside the clinic itself.

### Dermatological specialty training areas

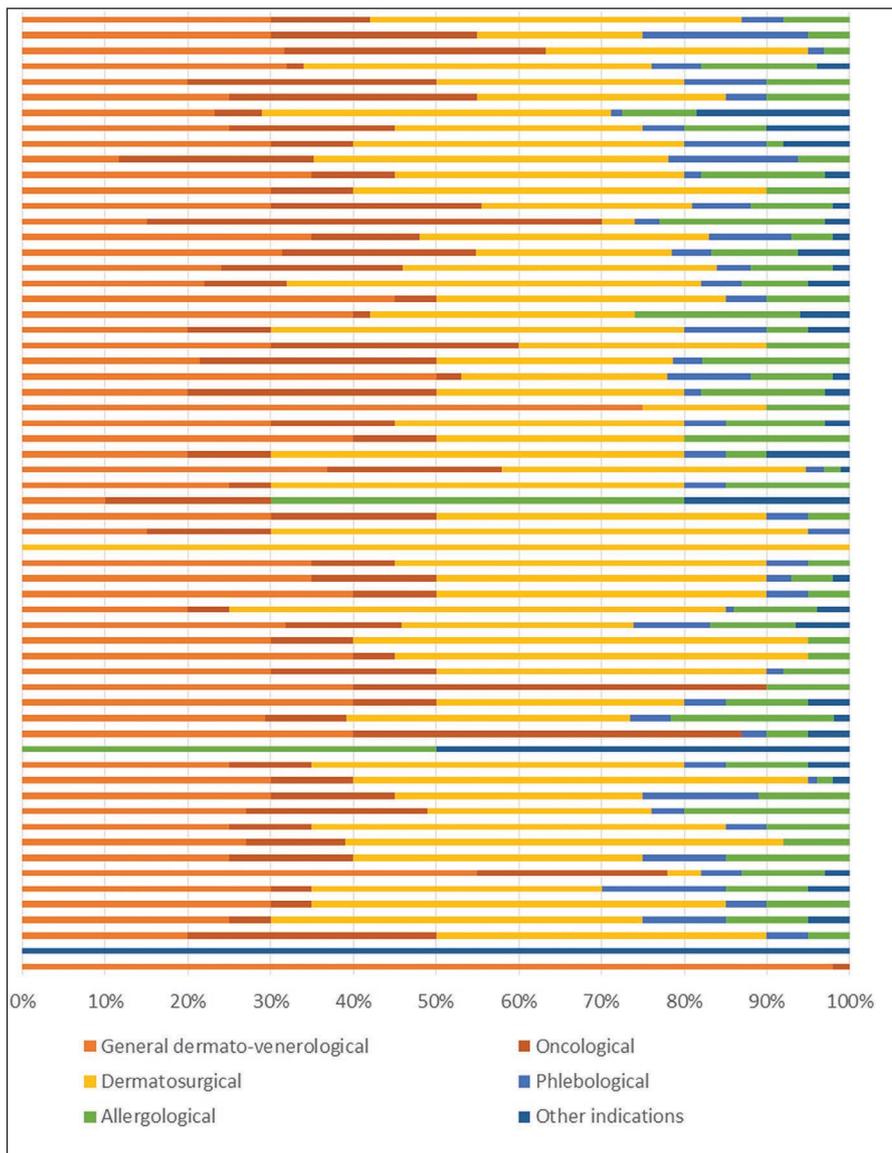
As expected, the most common area of training offered was for skin and venereal diseases (all clinics), followed by allergology (84 of 95 clinics), medical tumor therapy (53 of 95), dermatohistology (41 of 95), phlebology (41 of 95), proctology (13 of 95), andrology (11 of 95), and psychotherapy (6 of 95).

### Staffing situation of the skin clinics

Physician staffing was divided into an average of 14 full-time physicians and three part-time positions (UC: 23/5, NUC:



**Figure 1** Spectrum of care of dermatology departments in 2011, 2015, and 2019 (% in principal diagnoses; data from 62 of the 95 participants).



**Figure 2** Spectrum of care of individual dermatology clinics in 2018 (% in principal diagnoses; data from 62 of the 95 participants).

9/2) (Figure 3). University hospitals and urban areas had significantly higher numbers of positions. The highest number of full-time physicians was 48 (Figure 4).

The average proportion of women in senior physician positions was 53.0 %, and in resident physician positions 73.3 % (Figure 5). There is a significantly lower proportion of female senior physicians at UC compared to NUC (UC: 42.4 %, NUC: 58.7 %), as well as in urban compared to rural regions (urban: 50.2 %, rural: 63.7 %). At resident level, the proportion of women is also slightly lower at UC with 68.9 % compared to 75.8 % at NUC.

### Applicant situation

The market situation of applicants for senior physicians and specialists was rated as very poor (68.2 % for senior

physicians, 58.8 % for specialists “rather/very poorly”), while the situation for assistants was significantly better (only 6.4 % “very poorly”) (Figure 6). The application situation for senior physicians and specialists is worse at NUC and in rural regions than at UC and in urban areas.

### Assessment of the clinic situation from a management perspective

#### *Positions in clinical care and research within the overall hospital*

The position in the clinical performance balance of the overall hospital was classified by the majority among all institutions in the upper (67.9 %) or middle (21.0 %) third (UC: 66.7 %/16.7 %; NUC: 68.6 %/23.5 %). The same was true for the position of the dermatology departments

**Table 2** Availability of key clinical areas in the dermatology hospitals or in external departments (responses from n = 33 UC, n = 50 NUC).

	University Clinics (UC) Available in ...				Non-university clinic (NUC) Available in ...				
	n	Clinic (%)	Third-party department (%)	Both (%)	n	Clinic (%)	Third-party department (%)	Both (%)	
Allergology	With laboratory	24	100.0	0.0	0	27	96.3	0.0	3.7
	Without laboratory	7	100.0	0.0	0	24	100.0	0.0	0.0
Andrology	With laboratory	11	90.9	9.1	0	8	87.5	12.5	0.0
	Without laboratory	1	0.0	100.0	0	3	66.7	33.3	0.0
Aesthetic dermatology		25	100.0	0.0	0	33	90.9	9.1	0.0
Dermatosurgery		33	100.0	0.0	0	50	100.0	0.0	0.0
Dermatohistology	With laboratory	24	100.0	0.0	0	17	64.7	35.3	0.0
	Without laboratory	1	100.0	0.0	0	7	71.4	28.6	0.0
Dermatooncology		33	100.0	0.0	0	49	95.9	4.1	0.0
Infectiology		29	82.8	17.2	0	43	83.7	16.3	0.0
Venereology		28	96.4	3.6	0	42	97.6	2.4	0.0
Laser medicine		30	100.0	0.0	0	43	95.3	4.7	0.0
Drug tumor therapy		33	97.0	3.0	0	43	90.7	9.3	0.0
Microbiology	With laboratory	10	40.0	60.0	0	14	35.7	57.1	7.1
	Without laboratory	12	75.0	25.0	0	7	57.1	42.9	0.0
Mycology	With laboratory	26	96.2	3.8	0	28	75.0	21.4	3.6
	Without laboratory	0				3	66.7	33.3	0.0
Phlebology		32	96.9	3.1	0	42	76.2	23.8	0.0
Photobiology/Therapy		31	100.0	0.0	0	49	100.0	0.0	0.0
Photopheresis (ECP)		26	61.5	38.5	0	23	39.1	60.9	0.0
Proctology		27	70.4	29.6	0	42	64.3	35.7	0.0
Psychotherapy		23	26.1	73.9	0	32	25.0	75.0	0.0
Telemedicine		17	52.9	47.1	0	23	56.5	43.5	0.0
Wound care		31	100.0	0.0	0	50	98.0	2.0	0.0
Pediatric dermatology		31	96.8	3.2	0	46	73.9	21.7	4.3

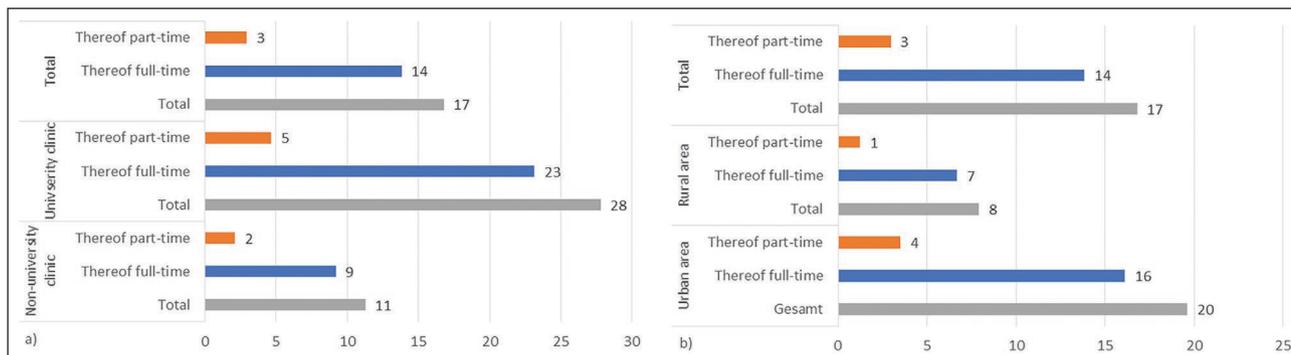


Figure 3 Distribution of physician positions in 2018 by clinic type (a) and by type of region (b).

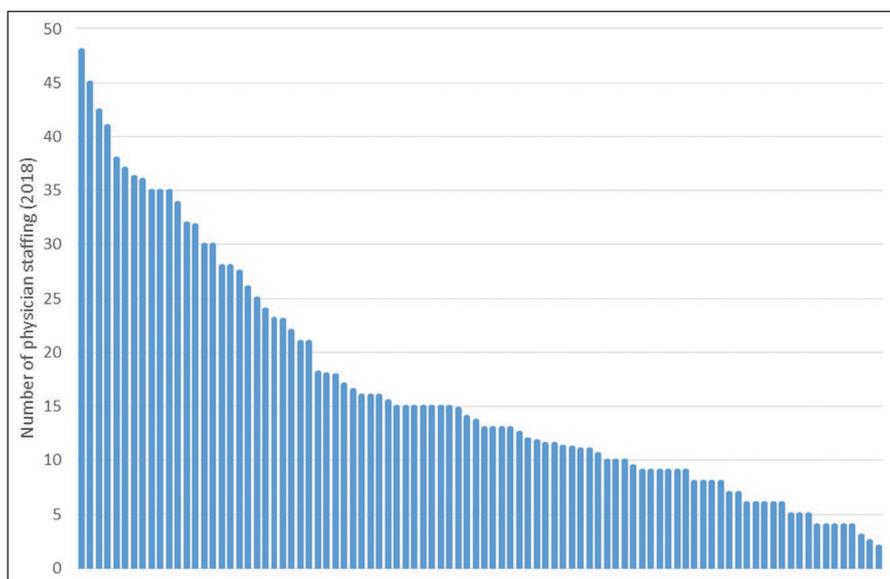


Figure 4 Distribution of physician positions in 2018.

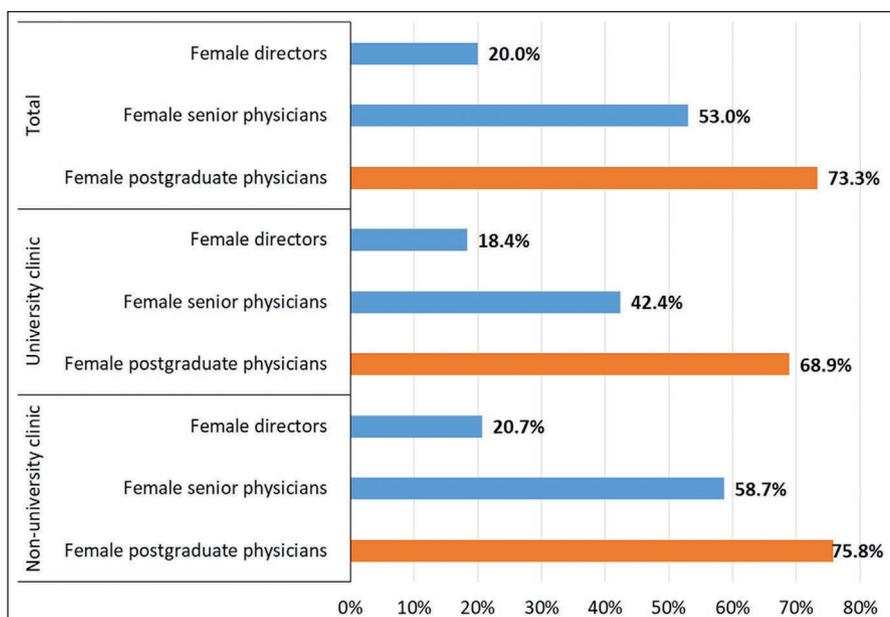
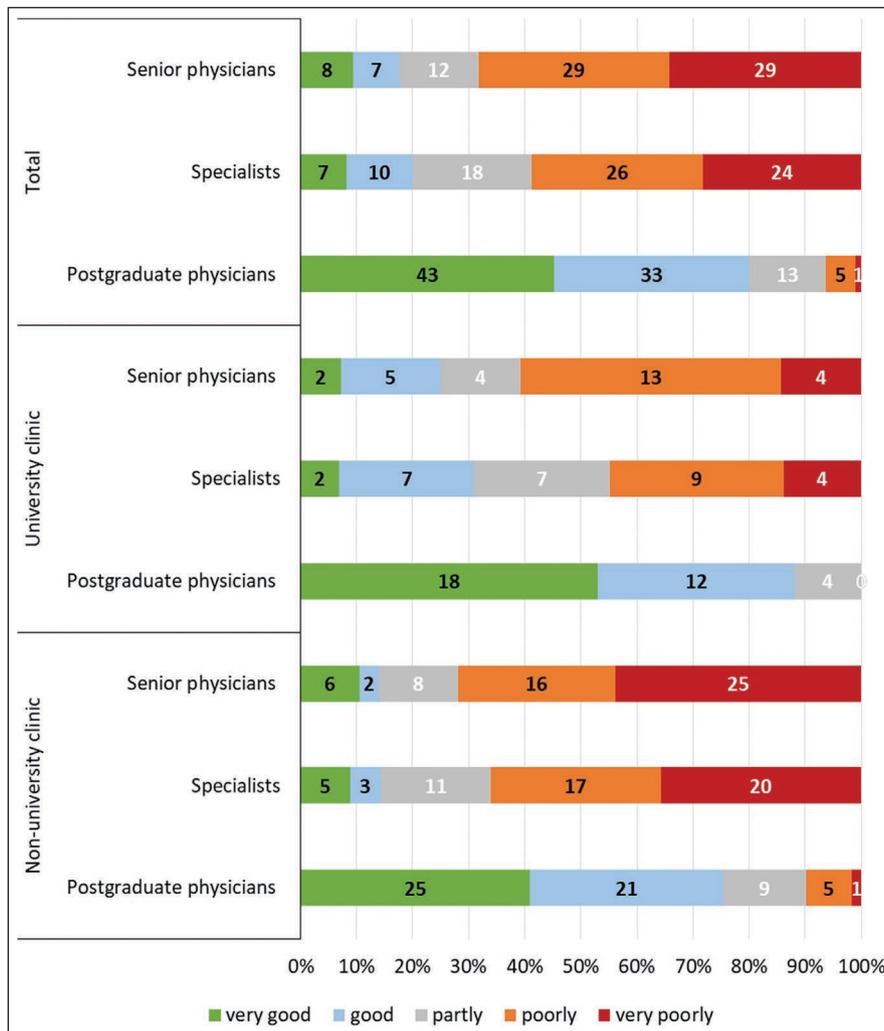


Figure 5 Distribution of physician positions in 2018 by gender (proportion of female physicians; n = 95 clinics for assistant and senior physicians, n = 115 for directors).



**Figure 6** Distribution of the assessed situation regarding job applications in 2019 from the perspective of clinic directors (n = 95 clinics).

in the research balance of the overall hospital, the majority of which were also classified in the upper (66, 7 %) or middle (26.7 %) third (UC: 67.7 %/29.0 %; NUC: 65.5 %/24.1 %).

**Satisfaction with general conditions of inpatient care**

Among dermatology hospital directors, 38.9 % expressed themselves as “very or rather satisfied” and 31.6 % as “very or rather dissatisfied” with the general conditions of inpatient care (UC: 44.1 %/31.2 %; NUC: 36.0 %/32.3 %) (Figure 7). Dissatisfaction was significantly higher in rural areas (52.4 %) than in urban areas (25.7 %). Comparing the last eight years, an increase of rather or very satisfied clinic directors was found.

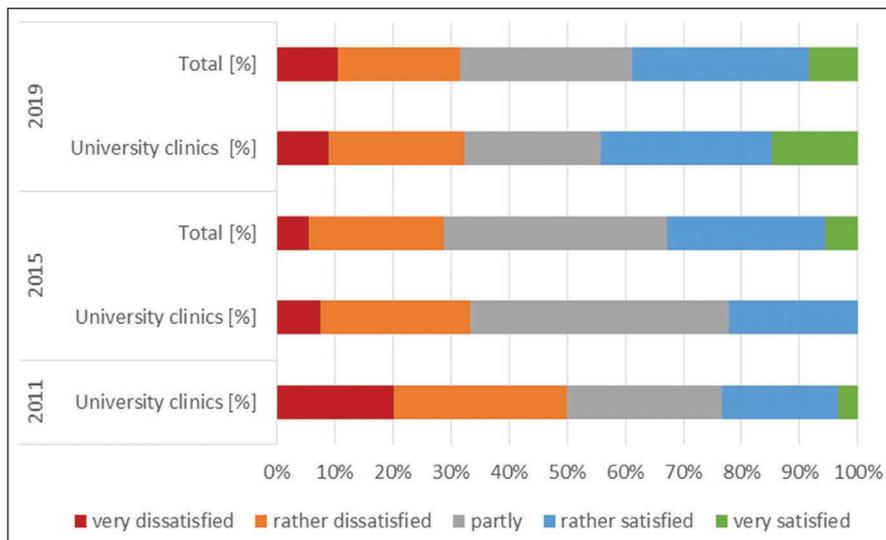
In multivariate regression analysis including structural data (geographical settlement area, number of beds) and performance data (number of cases, CMI, CM, length of stay,

remuneration), only a positive research record proved to be a significant determinant of satisfaction (B = 0.862; p = 0.040).

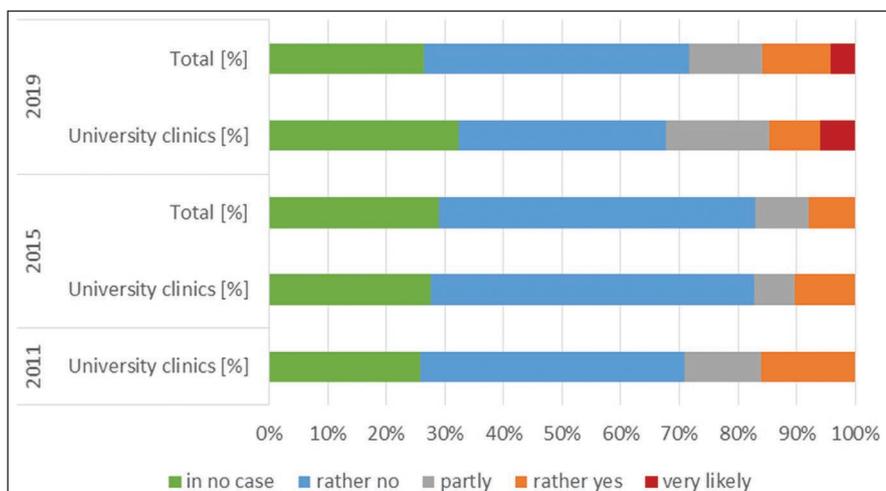
**Assessments of threats to inpatient dermatologic care**

The general conditions were satisfactory for only 38.9 % of the directors surveyed (Figure 8), and 31.6 % of the directors were very or somewhat dissatisfied (UC: 44.1 %/31.2 %; NUC: 36.0 %/32.3 %). Dissatisfaction was significantly higher in rural areas (52.4 %) than in urban areas (25.7 %). However, only a small proportion (16.4 %) of the surveyed clinics saw a threat to inpatient dermatological care (UC: 14.7 %; NUC: 16.4 %). Here, too, the threat was assessed significantly higher by clinics in rural areas (28.6 %) than in urban areas (12.2 %).

In the multivariate regression analysis including structural data (settlement area, number of beds) and performance data (number of cases, CMI, CM, length of stay,



**Figure 7** Satisfaction with the general conditions of inpatient care in a comparison of clinics and over time in 2011, 2015, and 2019 (n = 95 clinics in 2019).



**Figure 8** Assessment of the perceived degree of potential threats to inpatient dermatologic care from the perspective of clinic directors over time in 2011, 2015, and 2019 (n = 95 clinics in 2019).

remuneration), only inpatient occupancy proved to be a significant determinant of the subjective threat ( $B = -0.044$ ;  $p = 0.034$ ), albeit with a small explanatory value.

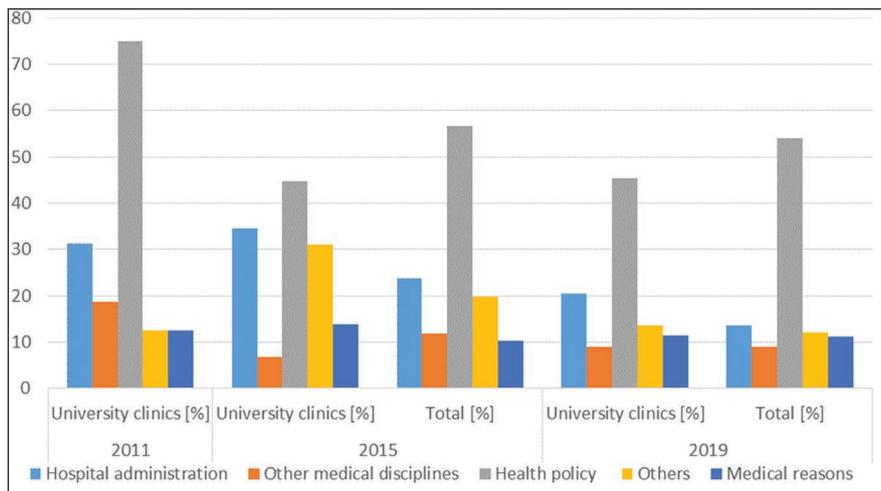
**Assessment of the causes of threats of inpatient dermatological care**

Health policy (70.5 %), followed by hospital administration (17.9 %), were the most frequently cited causes of risk (Figure 9). These percentages were higher in NUCs than in UCs and higher in rural than in urban areas.

**Discussion**

The aim of the present analysis was to characterize the health care profiles of German inpatient dermatology departments

with regard to the designated specialties with areas of further training as well as the personnel situation. This was intended to provide a factual report on the situation of inpatient dermatological care in Germany as a supplement to preceding performance data. In view of the changes in the care system, also in dermatology [3], this topic is of vital importance for the future care planning and positioning of dermatology. With 95 of the 115 clinics, data of more than 80 % of the total facilities could be obtained and thus largely meaningful conclusions could be obtained. One limitation of the data is that they are based on self-reporting by the hospital management. This is unavoidable for data protection reasons, as there is no direct access to this structural and performance data in Germany. This self-reporting could result in an overestimation or underestimation of the true data.



**Figure 9** Assessment of the potential areas of threats to inpatient dermatologic care from the perspective of clinic directors over time in 2011, 2015, and 2019 (n = 95 clinics in 2019).

The performance data have already shown that the current situation of the dermatology hospitals is largely stable and that these clinics predominantly have priority placements in the overall clinics in both the clinical and scientific areas. The staffing of the clinics is predominantly appropriate for performance, but in some cases already inadequate. The expected shortage of specialists and senior physicians could be a cause for concern, especially in rural areas and at non-university facilities.

Although there are some specialized clinics, the majority of clinics continue to offer a broad range of surgical and non-surgical interventions and a large number of indications. This breadth is also reflected in the fact that most clinics, in addition to the authorization for specialist training in dermatology and venereology (100 %), also have a further number of important further training authorizations for additional qualifications in-house, such as allergology, phlebology, dermatohistology and medicinal tumor therapy.

This wide range of topics may also have contributed to the fact that the majority of hospitals do not yet see any problems in recruiting junior physicians. However, the demand situation for specialists and senior physicians is already tight in many hospitals.

Overall, it can be seen that despite all the heterogeneity of the clinics and their process and structural set-up, the provision of care can be assessed as stable and of high quality. With regard to future care tasks, especially against the background of demographic change, the dermatology hospitals appear to be well positioned across the entire spectrum of care in the field of dermatology.

With regard to the challenges and future risk potentials named by many clinic directors, impulses must be set in particular in the area of junior staff development for specialist and senior physician positions, but also with regard to incentives for maintaining a wide range of care at the clinics.

In concordance with the assessments of the clinic directors, a threat to inpatient dermatological care is not to be assumed in view of the given need for care in dermatology. In addition, most dermatology departments have been positioning themselves in the upper to middle third of the performance and research balances of the corresponding hospitals for years, which contributes to securing their activities. In this study, the staffing situation was also addressed for the first time, since the need for care must also be met in terms of personnel. Ubiquitously, the applicant situation for specialists and senior physicians was described as deficient. While the applicant situation is well covered at resident level, the dissonance between the gender proportions at the different hierarchy levels is evident for specialist and senior physician positions. While an average of 75 % of residents are still female, the gender ratio levels out at the higher levels. With predominantly full-time positions, specialist and senior physician positions presumably turn out to be unattractive for the majority of female dermatologists, which explains the poor applicant situation. Here it is necessary to adapt the working conditions of feminized medicine with more family-friendly part-time positions and thus to make the applicant situation more attractive again in order to be able to cover the future dermatological care with well-trained personnel. However, the high demands in the form of economic pressure, demographic change and the increase of part-time positions in medicine will continue to pose challenges for clinics in the future. Further studies should therefore once again focus on the supply and demand situation of the clinic and focus on the far more frequent case of underuse compared to overuse and misuse. The analysis of future care needs in view of demographic developments and the significant increase in inpatient treatment of diseases in the elderly should also be kept in mind. Within the canon of specialties, even more outpatient care can be expected in individual indication areas, for

example in the subarea of allergology [4]. In Germany there will also be a change in the management and a new technological orientation of dermatology due to the expansion of digital technologies [5–7]. Although this is likely to affect the outpatient sector far more, effects on the inpatient sector are not unlikely. The improved administrative and informational governance of the sector transition through digital processes will benefit everyone in the process.

### Conclusions

The performance figures of German bed-based dermatology clinics are in a predominantly similar range compared to 2011 and 2015. Most dermatology clinics are found in a comparatively good overall performance balance. Within the clinics as well as in the comparison of urban to rural areas, clear disparities are found. The personnel situation among senior physicians and specialists as well as the general development of health care policy are considered problematic. For the future, however, inpatient care appears to remain largely stable in terms of service numbers and demand. The comparatively wide range of indications is a factor of diversification in a positive sense, enabling a better response to future demand. It is also more in line with the needs of the population than narrow specialization on the part of providers. In addition, it meets the demand of the subject of dermatology as a broadly providing discipline and ensures the appropriate further training according to the corresponding catalog.

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### Conflict of interest

The authors are members of university dermatology clinics that were researched in this article.

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