End-of-life care of nursing home residents: A survey among general practitioners in northwestern Germany

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Aim: To describe general practitioners’ (GPs) perspectives on end-of-life care of nursing home residents.

Methods: We carried out a cross-sectional study among GPs in northwestern Germany. A sample of 1121 GPs was randomly drawn from a list of general practitioners in northwestern Germany. A questionnaire was sent to a random sample of 1121 GPs in the German federal states of Bremen and Lower Saxony in 2018. The questionnaire included items regarding their perceptions of end-of-life care and hospitalization among nursing home residents. To improve end-of-life care, better training in palliative care for nursing staff and GPs might be warranted. In addition, advance care planning can help to ensure that residents’ wishes are respected.

Conclusions: This study showed that GPs tend to be critical regarding end-of-life care in nursing homes. To improve end-of-life care, better training in palliative care for nursing staff and GPs might be warranted. In addition, advance care planning can help to ensure that residents’ wishes are respected.

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Introduction

With an aging population, in many Western countries, nursing homes are becoming an increasingly important place in which many older people spend their last days of life and eventually die. In Germany, for instance, the proportion of older people dying in nursing homes increased to 20% in recent years.1 Similar trends have been identified in other countries.2,3

Previous research showed that the hospitalization rates of nursing home residents (NHR) are the highest near the end of life,4 although a large proportion of such hospitalizations are deemed inappropriate, are distressing for patients and often result in negative health outcomes.5 In many cases, treating residents in their familiar environment of the nursing home might more adequately correspond to residents’ wishes.6 Nevertheless, in Germany, approximately 30% of NHR die in hospital instead of the nursing home.7

Advance care planning (ACP) or the presence of explicit advance directives (AD) might contribute to a reduction in the rate of hospitalization, and have been shown to impact the quality of end-of-life care.8,9 However, in Germany, ACP, which aims to define a person’s wishes regarding future medical treatment decisions in the case of physical or mental deterioration,10 is still uncommon in nursing homes. Furthermore, AD are completed only by a minority of residents and are often difficult to interpret in complex situations.11 The available international evidence also suggests that inappropriate hospital admissions at the end of life could be reduced by palliative care consultations.12

In Germany, patients have free choice of physicians in outpatient care.13 The majority have their own general practitioner (GP), who usually continues providing medical care after the patient has entered a nursing home. However, palliative medicine is not an obligatory part of the training pathway for GPs in Germany.14 Almost all NHR are regularly visited by their GP.15 GPs are often involved in the decision whether or not to transfer a NHR to a hospital, and play an important role in end-of-life care.16,17 Their perspectives can therefore be considered essential in examining the end-of-life care of NHR, but, to the best of our knowledge, research on this is rare.

The aim of the present study was to assess GPs’ perspectives on end-of-life care and hospitalization among NHR, and to identify areas for improvement.

Methods

Study design

We carried out a cross-sectional study among GPs in northwestern Germany. A sample of 1121 GPs was randomly drawn from a list of general practitioners in northwestern Germany. A questionnaire was sent to a random sample of 1121 GPs in the German federal states of Bremen and Lower Saxony in 2018. The questionnaire included items regarding their perceptions of end-of-life care and hospitalization among nursing home residents. To improve end-of-life care, better training in palliative care for nursing staff and GPs might be warranted. In addition, advance care planning can help to ensure that residents’ wishes are respected.
the Association of Statutory Health Insurance Physicians (including general internists working in primary care; approximately \( n = 5500 \)) in the German federal states of Bremen and Lower Saxony. In August 2018, GPs were invited by postal letter to complete a paper-based questionnaire. A reminder was sent after 2 weeks. All data were collected anonymously.

Several strategies shown by a Cochrane review to increase response to postal surveys were applied.\(^1\) Those include a short questionnaire, follow-up contact, providing a second copy of the questionnaire at follow up, personalized letters, prepaid return envelopes and academic origin of the study.

Quantitative analysis

A multidisciplinary research team developed the four-page questionnaire on medical care provision in nursing homes, hospital admissions, emergency department visits and end-of-life care.

On the topic of end-of-life care, we first asked for the estimated proportion of NH patients who have completed an AD. Furthermore, the GPs were asked to judge how often these directives include information regarding hospital transfers at the end of life and how often these directives are not taken into account. The second part contained five questions addressing current practices and potential deficits of end-of-life care on a 5-point Likert scale ranging from “0 = strongly disagree” to “4 = strongly agree”. GPs were also asked to estimate the proportion of NH patients dying in hospital, and whether this proportion has changed over the past 10 years (“decreased”, “remained unchanged”, “increased”). Another question regarded the overall rating of end-of-life care in nursing homes (“rather poor”, “rather good”), and if rated as “rather poor”, GPs were invited to state what they considered the most important measure to improve end-of-life care (free text).

Furthermore, the following characteristics of the GPs were requested: age, sex, number of years working as a GP, practice type (single practice, group practice/medical care center) and location (rural \(<20\,000\), semi-urban \(20\,000\) to \(100\,000\), urban \(>100\,000\) inhabitants), number of nursing homes visited, number of residents cared for and whether the GP had a qualification in palliative medicine in Germany, to obtain a qualification in palliative medicine as a subspecialty, physicians have to attend a 12-month training program in palliative care or 120 h of seminars in addition to a theory course.\(^2\)

The questionnaire was pretested and discussed with GPs before data collection was started.

Statistical analysis

Descriptive measures were computed. Frequencies were calculated for categorical data, and continuous data are presented as mean with standard deviation (SD). Responses relating to the perspectives on current practices and deficits of end-of-life care were compared between GPs with and without a qualification in palliative medicine using \( \chi^2 \)-tests. Free-text answers were summarized to inductively generated categories based on the given answers (measures for improvement). This was carried out independently by two authors and any disagreement was resolved by discussion. The categories were presented as frequencies. We did not exclude questionnaires due to missing values. However, each analysis was restricted to individuals with no missing values for the respective question (i.e. the number of included questionnaires differs).

Multivariable logistic regression was used to estimate odds ratios (OR) and 95% confidence intervals (CI) to identify factors associated with rating end-of-life care as “rather poor”. The logistic regression model included sex, years working as a GP, practice type, practice location, number of residents cared for and qualification in palliative medicine. Respondents’ age and number of nursing homes visited were not included, as they correlate closely with years working as a GP and the number of NH patients cared for, respectively. A statistically significant difference was stated for \( P \)-values <0.05.

All analyses were carried out using SAS for Windows version 9.4 (SAS Institute, Cary, NC, USA).

This study received a waiver from the local medical ethics committee of the Carl von Ossietzky University of Oldenburg (no. 2018–080).

Results

Respondents

Of 1121 mailed questionnaires, 375 were returned (response rate 33.5%). The mean age of the participants was 54.4 years, and 57.6% were men (Table 1). Most participants worked in group practices or medical care centers (67.0%), and more than half were located in rural areas (52.3%). A total of 24.3% of GPs had a qualification in palliative medicine. The mean number of GPs’ patients living in nursing homes was 46.8 (SD 43.5, range 0–360), and the respondents were visiting a mean of 4.1 (SD 2.2, range 0–15) nursing homes.

Table 1 Characteristics of the respondents

| Characteristics                                      | \( \text{Total} \) n = 375 |
|------------------------------------------------------|---------------------------|
| Age, years \((n = 371)^1\)                           |                           |
| \(<50\)                                               | 28.6%                     |
| \(50–59\)                                             | 40.4%                     |
| \(\geq 60\)                                           | 31.0%                     |
| Mean ± SD                                            | 54.4 ± 9.3                |
| Sex \((n = 373)^1\)                                  |                           |
| Male                                                 | 57.6%                     |
| Female                                               | 42.4%                     |
| Years as general practitioner \((n = 373)^1\)        |                           |
| \(<10\)                                               | 25.2%                     |
| \(10–19\)                                             | 28.4%                     |
| \(\geq 20\)                                           | 46.4%                     |
| Mean ± SD                                            | 18.0 ± 10.8               |
| Practice type \((n = 373)^1\)                        |                           |
| Single practice                                      | 33.0%                     |
| Group practice/medical care center                   | 67.0%                     |
| Practice location \((n = 373)^1\)                    |                           |
| Rural \((\leq 20\,000\) inhabitants)                 | 52.3%                     |
| Semi-urban \((>20\,000\) to \(\leq 100\,000\) inhabitants) | 25.2%                     |
| Urban \((>100\,000\) inhabitants)                    | 22.5%                     |
| No. nursing homes visited \((n = 373)^1\)            |                           |
| \(<3\)                                                | 21.7%                     |
| \(3–4\)                                               | 42.9%                     |
| \(\geq 5\)                                            | 35.4%                     |
| Mean ± SD                                            | 4.1 ± 2.2                 |
| No. residents cared for \((n = 367)^1\)              |                           |
| \(<20\)                                               | 20.2%                     |
| \(20–49\)                                             | 42.8%                     |
| \(\geq 50\)                                           | 37.1%                     |
| Mean ±SD                                             | 46.8 ± 43.5               |

*Total n = 375. Numbers differ because of missing values. SD, standard deviation.*
Advance directives and hospitalization at the end of life

The mean proportion of NHR dying in hospital was estimated to be 43.1% (SD 20.1%). When asked how the proportion of in-hospital deaths changed over the past 10 years, 31.4% of GPs answered that this proportion decreased, 26.2% answered that it remained unchanged, whereas 42.4% thought there was an increase of in-hospital deaths (Table S1).

GPs estimated the average proportion of NHR with an AD to be 36.8% (SD 20.7%). When asked how often these directives include information regarding hospital transfers at the end of life, the reported mean proportion was 31.9% (SD 28.5%). Respondents estimated the proportion of AD that were not taken into account in correspondence with the patient’s stated wishes to be 40.3% (SD 27.0%; Table S1).

End-of-life care

Overall, 71.1% answered that NHR at the end of life are treated in hospital too often. A much smaller proportion agreed that residents should be enrolled more frequently in specialized outpatient palliative care (SAPV) (40.9%). Most physicians (81.8%) agreed that nursing staff should be better trained in end-of-life care. More than half of the respondents (56.5%) thought that GPs are generally well trained to care for residents at the end of life (Fig. 1). A total of 41.9% of respondents agreed that GPs should be available for end-of-life care outside of office hours, whereas 39.5% disagreed.

Overall, more than half of all respondents (53.8%) rated end-of-life care of NHR as “rather poor” (Table S1). In the multivariable regression, we found that GPs who had a qualification in palliative medicine were significantly more likely to rate end-of-life care as “rather poor” (OR 1.89, 95% CI 1.10–3.23; Table 2). A statistically significant association was also found for being female and working as a GP for <10 years, and a more negative rating of end-of-life care. All other characteristics were not statistically significant.

Measures for improvement

Of those 193 GPs who rated end-of-life care of NHR as “rather poor”, 292 free-text responses regarding the most important measures for improvement were received. From these, we constructed 16 categories. The three measures stated as most important were a higher nurse staffing ratio (33.6%), as well as better qualification for nursing staff including more training in palliative care (30.5%), followed by further strengthening palliative care structures (11.3%). Other aspects mentioned included, for example, better communication and increased adoption of AD (Table S2).

Comparison by qualification in palliative medicine

As already shown by the multivariable regression, GPs with a qualification in palliative medicine were more likely to rate end-of-life care of NHR as “rather poor” (64.0% vs 50.5%). They also considered more frequently the proportion of hospitalizations at the end of life as too high (80.2% vs 68.2%). More GPs with a qualification in palliative medicine agreed that more residents...
should be enrolled in specialized outpatient palliative care, and that GPs should also be available to provide end-of-life care outside office hours (Table 3).

There were only minor differences between GPs with palliative medicine qualifications and those without such qualifications in their reporting of the proportion of NHR dying in hospital (with a mean of 41.6% vs 43.6%), as well as of residents having an AD (with a mean of 37.7% vs 36.6%).

**Discussion**

Our survey among GPs in northwestern Germany shows some variation in the perspectives of end-of-life care depending on a qualification in palliative medicine. Overall, more than half of respondents rated end-of-life care in nursing homes as “rather poor”. Approximately three-quarters agreed that residents are treated too often in hospital at the end of life. For both of these questions, GPs with a qualification in palliative medicine tended to rate the care of NHR at the end of life more negatively. GPs considered the most important measures to improve end-of-life care to be a higher staff-to-resident ratio, as well as more highly-skilled nursing staff. Furthermore, AD are frequently regarded as not adequately valid in terms of end-of-life hospitalizations.

The proportion of NHR who had completed an AD was estimated to be 36.7%. This corresponds to the findings of another recent study interviewing residents of five nursing homes in southern Germany. Although two other German studies reported considerably lower proportions, a further recent study of primary care patients aged ≥85 years including community-dwelling older adults and NHR suggested a much higher dissemination of AD at almost 70%. However, it was shown that most existing AD are inadequate or not sufficiently informative for decision-making in specific scenarios. This supports our finding that GPs estimated just 30% of all AD include information regarding hospital admissions at the end of life. The present study also suggests a high proportion of non-compliance with wishes stated in AD in German nursing homes. This issue has previously been raised in the literature. Taking the results of the present study together, only approximately every 10th resident seems to have an AD with valid information on preferences about end-of-life institutionalization.

In order to increase the availability of valid AD and therefore improve adherence to residents’ wishes, ACP might be of great benefit. It has been shown that ACP leads to increased adoption of AD in nursing homes. Also, some of the GPs in our survey mentioned strengthening the residents’ wishes and the presence of AD as the most important measure to improve end-of-life care. However, it is important to bear in mind that ACP is inherently a process of discussing in advance a person’s preferences regarding future treatment decisions in the case of physical or mental deterioration. As dementia is an important reason for transitions to a nursing home and more than half of residents suffer from dementia, it is clear that this communication process should begin before institutionalization.

Overall, the majority of GPs (71%) agreed that NHR at the end of life are hospitalized too often. In Germany, almost 30% of NHR die in hospital. In the present study, GPs perceived this proportion as even higher and indicated this as a major problem. When compared with other Western countries, end-of-life hospitalizations of NHR occur more frequently in Germany. For instance, a Dutch study found that just 1.5% of NHR with various

### Table 2 Multivariable logistic regression models for general practitioners’ characteristics associated with rating end-of-life care of nursing home residents as “rather poor”

| Characteristic                      | Odds ratio (95% confidence interval) |
|-------------------------------------|--------------------------------------|
| Sex (reference: male)               |                                       |
| Female                              | 1.70 (1.06–2.70)                     |
| Years as general practitioner       |                                       |
| (reference: ≥20 years)              |                                       |
| <10                                 | 2.02 (1.15–3.53)                     |
| 10–19                               | 1.10 (0.65–1.89)                     |
| Practice type (reference: Single practice) |                                   |
| Group practice/medical care center  | 1.05 (0.65–1.70)                     |
| Practice location (reference: rural) |                                       |
| Semi-urban                          | 1.52 (0.89–2.62)                     |
| Urban                               | 1.50 (0.85–2.66)                     |
| No. residents cared for (reference: <20) |                                   |
| 20–49                               | 1.16 (0.63–2.11)                     |
| ≥50                                 | 0.76 (0.41–1.41)                     |
| Qualification in palliative medicine (reference: no) |                 |
| Yes                                 | 1.89 (1.10–3.23)                     |

*Total n = 346 (only responses without missing values in any of the included variables are included in the regression model).

### Table 3 Comparison of responses between general practitioners with a qualification in palliative medicine and those without

| Qualification in palliative medicine | Yes (n = 91) | No (n = 284) | P-value |
|--------------------------------------|-------------|-------------|---------|
| Residents are too often treated in hospital at the end of life (n = 374)† | Strongly disagree/disagree (0–1) | 7.7% | 13.4% | 0.0864 |
|                                       | Neither agree nor disagree (2) | 12.1% | 18.4% |         |
|                                       | Agree/strongly agree (3–4) | 80.2% | 68.2% |         |
| Residents should be enrolled more frequently in specialized outpatient palliative care (SAPV) (n = 374)† | Strongly disagree/disagree (0–1) | 20.9% | 37.1% | 0.0161 |
|                                       | Neither agree nor disagree (2) | 29.7% | 24.7% |         |
|                                       | Agree/strongly agree (3–4) | 49.5% | 38.2% |         |
| General practitioners should also be available for end-of-life care outside office hours (n = 372)† | Strongly disagree/disagree (0–1) | 1.1% | 6.7% | 0.0199 |
|                                       | Neither agree nor disagree (2) | 7.7% | 14.5% |         |
|                                       | Agree/strongly agree (3–4) | 91.2% | 78.8% |         |
| General practitioners are generally well trained to care for residents at the end of life (n = 370)† | Strongly disagree/disagree (0–1) | 27.5% | 43.4% | 0.0237 |
|                                       | Neither agree nor disagree (2) | 20.9% | 17.8% |         |
|                                       | Agree/strongly agree (3–4) | 51.6% | 38.8% |         |
| Overall rating of end-of-life care in nursing homes (n = 359)† | Rather poor | 64.0% | 50.5% | 0.0297 |
|                                       | Rather good | 36.0% | 49.5% |         |

†Numbers differ because of missing values.
stages of dementia were hospitalized in the last week of life. Although <5% had an AD, nearly all had a palliative care goal on the day of death, which means that in the Netherlands, physicians often withhold potentially burdensome treatments for those residents, irrespective of an AD. However, in the Netherlands, specially trained elderly care physicians are employed by nursing homes, with approximately one full-time physician per 100 residents and palliative care is a focus of their training. These findings suggest that variations in end-of-life hospitalizations between countries might be explained not only by the presence of AD or palliative care goals, but also by the respective structures (e.g., availability and training of physicians) in the different healthcare systems, as well as by family and cultural preferences. However, further investigation is required on this question.

Approximately 40% of the respondents in our survey thought that GPs should be available for end-of-life care outside office hours. This is in line with another survey carried out in Lower Saxony that reported that 45% of GPs indicated they are available around the clock to their palliative patients. In the Netherlands, this proportion is even higher, with 60% and 86% of GPs available outside office hours for their terminally ill patients. Interestingly, GPs with a qualification in palliative medicine were more likely to agree with this statement in our survey, indicating a higher awareness of this problem.

GPs with a qualification in palliative medicine were also more likely to rate end-of-life care as “rather poor”. This underlines that these physicians are more critical, which is in line with findings of Reyniers et al. showing that GPs with formal palliative care training more frequently labeled terminal hospital admissions as potentially avoidable. To ensure adequate end-of-life care, NHR therefore might benefit from further integration of palliative care into GP training schemes. Furthermore, in the present study, almost half of all respondents thought that GPs are not well trained for end-of-life care, and an even higher proportion thought the same for nurses. This is underlined by a survey across six European countries, which concluded that the knowledge of nursing staff on palliative care needs to be improved. Overall, better education on palliative care seems to be essential to improve end-of-life care.

A strength is that we were able to analyze nearly 400 GPs, which was also our originally calculated sample size. It might be suggested that a response of 33.5% could point to selection bias, and that GPs with an interest in palliative care might have been overrepresented. At 24%, the proportion of GPs qualified in palliative medicine was comparatively high in the present study. In contrast, our response is quite comparable and in the upper range of other recently published surveys of German GPs. Furthermore, compared with the gross sample, respondents did not differ with respect to sex (with 60.1% vs 57.6% men). We also applied several strategies shown by a Cochrane review to increase response to postal surveys.

Some of the present results (e.g., on the proportion of NHR having AD) have to be interpreted with caution, as they are solely based on GPs’ own estimation and more valid methods for estimation might exist. However, our study aim was to assess GPs’ views on end-of-life care of NHR.

Overall, approximately seven out of 10 GPs considered that NHR are too often hospitalized during end of life, and more than half rated end-of-life care as “rather poor”. GPs with a qualification in palliative medicine were even more critical. The fact that end-of-life hospitalizations of NHR are more common in Germany than in other Western countries, where palliative care is more widely available, underlines that healthcare professionals should critically assess when palliative approaches are required. To do so, GPs and nursing staff require more training in palliative care. In addition, ACP can help to ensure that residents’ wishes regarding their end of life are respected.

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Disclosure statement

The authors declare no conflict of interest.

References

1. Dasch B, Blum K, Gude P, Bausewein C. Place of death: trends over the course of a decade: a population-based study of death certificates from the years 2001 and 2011. Disch Arztbl Int 2015; 112: 496–504. https://doi.org/10.3238/arztebl.2015.0496.
2. Houtekier D, Cohen J, Surkyn J, Deliens L. Study of recent and future trends in place of death in Belgium using death certificate data: a shift from hospitals to care homes. BMC Public Health 2011; 11: 228. https://doi.org/10.1186/1471-2458-11-228.
3. Kalteh J, Theisen OM. Trends in place of death: the role of demographic and epidemiological shifts in end-of-life care policy. Palliat Med 2017; 31: 964–974. https://doi.org/10.1177/0269216317692159.
4. Allers K, Hoffmann F. Mortality and hospitalization at the end of life in newly admitted nursing home residents with and without dementia. Soc Psychiatry Psychiatr Epidemiol 2018; 53: 835–839. https://doi.org/10.1007/s00212-018-1523-0.
5. Ouslander JG, Lamb G, Perloc M et al. Potentially avoidable hospitalizations of nursing home residents: frequency, causes, and costs. J Am Geriatr Soc 2010; 58: 627–635. https://doi.org/10.1111/j.1532-5415.2010.02768.x.
6. van Oorschot B, Múcke K, Círak A, Henking T, Neudert S. Desired place of death, living will and desired care at end of life: initial results of a survey of nursing home residents. Z Gerontol Geriatr 2018; 52: 582–588. https://doi.org/10.1007/s00391-018-1432-6.
7. Hoffmann F, Allers K. Dying in hospital among nursing home residents with and without dementia in Germany. Arch Gerontol Geriatr 2019; 82: 293–298. https://doi.org/10.1016/j.archger.2019.03.013.
8. Brinkman-Stoppenburg A, Rietjens JAC, van der Heide A. The effects of advance care planning on end-of-life care: a systematic review. Palliat Med 2014; 28: 1000–1025. https://doi.org/10.1177/0269216314526727.
9. Baron K, Hodgson A, Walhe C. Evaluation of an advance care planning education programme for nursing homes: a longitudinal study. Nurse Educ Today 2015; 35: 689–695. https://doi.org/10.1016/j.nedt.2015.01.005.
10. Rietjens JAC, Sudore RL, Connolly M et al. Definition and recommendations for advance care planning: an international consensus supported by the European Association for Palliative Care. Lancet Oncol 2017; 18: e543–e551. https://doi.org/10.1016/S1470-2045(17)30582-X.
11. Sommer S, Markmann G, Pentzek M, Wegscheider K, Abholz H-H, in der Schmitten J. Advance directives in nursing homes prevalence, validity, significance, and nursing staff adherence. Disch Arztblatt Int 2012; 109: 577–583. https://doi.org/10.3238/arztebl.2012.0577.
12. Miller SC, Lima JC, Intrator O, Martin E, Bull J, Hanson LC. Palliative care consultations in nursing homes and reductions in acute care use and potentially burdensome end-of-life transitions. J Am Geriatr Soc 2016; 64: 2280–2287. https://doi.org/10.1111/jgs.14469.
13. Busse R, Germany BM. Health system review. Health Syst Transit 2014; 16: 1–246.
14. Geiger K, Schneider N, Bleidorn J, Klindworth K, Jünger S, Müller-Mundt G. Caring for frail older people in the last phase of life- the general practitioners’ view. BMC Palliat Care 2016; 15: S2. https://doi.org/10.1186/s12904-016-0124-5.
15. Balzer K, Butz S, Bentzel J, Boulkhemair D, Lühmann D. Medical special- 16. interest and attendance in nursing homes. GMS Health Technol Assess 2013; 9: Doc02. https://doi.org/10.3205/hta001080.
17. Reyniers T, Houtekier D, Cohen J, Pasman HR, Deliens L. What justifies a hospital admission at the end of life? A focus group study on
perspectives of family physicians and nurses. *Palliat Med* 2014; 28: 941–948. https://doi.org/10.1177/0269216314522317.

18 Edwards PJ, Roberts I, Clarke MJ et al. Methods to increase response to postal and electronic questionnaires. *Cochrane Database Syst Rev* 2009; MR000008. https://doi.org/10.1002/14651858.MR000008.pub4.

19 Ärztekammer Niedersachsen. Auszug aus der Weiterbildungserordnung der Ärztekammer Niedersachsen und Richtlinien vom 01.05.2005, geändert zum 01.02.2012. 2012. Available at: https://www.aekn.de/fileadmin/media/Downloadcenter/Weiterbildung/WBO-Zusatzweiterbildungen/34Palliativmedizin.pdf. Accessed July 17, 2019.

20 In der Schmitten J, Lex K, Mellert C, Rothärmel S, Wegscheider K, Markmann G. Implementing an advance care planning program in German nursing homes results of an inter-regionally controlled intervention trial. *Dtsch Arztebl Int* 2014; 111: 50–57. https://doi.org/10.3238/arztebl.2014.0050.

21 Luck T, Rodriguez FS, Wiese B et al. Advance directives and power of attorney for health care for the oldest-old – results of the AgeQualiDe study. *BMJ Geriatr* 2017; 17: 85. https://doi.org/10.1136/bmjgeriatr-2017-100482.

22 Seitz D, Purandare N, Corn D. Prevalence of psychiatric disorders among older adults in long-term care homes: a systematic review. *Int J Psychogeriatr* 2010; 22: 1025–1039. https://doi.org/10.1017/S1041610210000608.

23 Allers K, Hoffmann F, Schnakenberg R. Hospitalizations of nursing home residents at the end of life: a systematic review. *Palliat Med* 2019; 0269216319866648. https://doi.org/10.1177/0269216319866648.

24 Hendriks SA, Smallbrugge M, Deliens L et al. End-of-life treatment decisions in nursing home residents dying with dementia in The Netherlands. *Int J Geriatr Psychiatry* 2016; 32: e43–e49. https://doi.org/10.1002/gps.4650.

25 Koopmans RTCM, Lavrijsen JCM, Hock JF, Went PBM, Schols JMGA. Dutch elderly care physician: a new generation of nursing home physician specializes. *J Am Geriatr Soc* 2010; 58: 1807–1809. https://doi.org/10.1111/j.1532-5415.2010.03043.x.

26 Schneider N, Buser K, Amelung VE. Attitudes of family doctors on health Care for Incurable Patients at the end of life-results from a survey in Lower Saxony. *Bibliogr Z Allg Med* 2006; 82: 298–304. https://doi.org/10.1055/s-2006-935314.

27 Plat FM, Peters YAS, Giesen P, Smits M. Availability of Dutch general practitioners for after-hours palliative care. *J Palliat Care* 2018; 33: 182–186. https://doi.org/10.1177/0825859718766947.

28 Hoexum M, Bosveld HE, Schulig J, Berendsen AJ. Out-of-hours medical care for terminally ill patients: a survey of availability and preferences of general practitioners. *Palliat Med* 2012; 26: 986–993. https://doi.org/10.1177/02692163124428527.

29 Reyniers T, Deliens L, Pasman HRW et al. Appropriateness and avoidability of terminal hospital admissions: results of a survey among family physicians. *Palliat Med* 2017; 31: 456–464. https://doi.org/10.1177/0269216316659211.

30 Smets T, Pivodic L, Piers R et al. The palliative care knowledge of nursing home staff: the EU FP7 PACE cross-sectional survey in 322 nursing homes in six European countries. *Palliat Med* 2018; 32: 1487–1497. https://doi.org/10.1177/0269216318785295.

Supporting information

Additional supporting information may be found in the online version of this article at the publisher’s website:

Table S1 Assessment of the current situation in German nursing homes.

Table S2 Most important measures to improve end-of-life care (n = 292).

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