Palliative care for idiopathic pulmonary fibrosis patients: Pulmonary physicians' view

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Abbreviations:

ES, effect size; ILD, interstitial lung disease; IPF, idiopathic pulmonary fibrosis; SD, standard deviation.

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ABSTRACT

Background and objective**:** Though idiopathic pulmonary fibrosis (IPF) has worse outcomes compared to most malignancies, patients with IPF receive poor access to optimal palliative care. This study aimed to characterise the practice of pulmonologist's regarding palliative care and end of life communication for patients with IPF and identify perceived difficulties and barriers thereto.

Methods: Self-administered questionnaires were sent by mail to representative pulmonologists from Shizuoka prefecture, Japan. Physician-reported practice, difficulties, timing of end of life communication and barriers related to palliative care were investigated.

Results: Among the 135 participants, 130 (96%) completed the questionnaire. Most of the participants reported that patients with IPF complained of dyspnoea and cough. However, less morphine was prescribed for IPF than for lung cancer. The participants experienced greater difficulty in providing palliative care for IPF than for lung cancer. Moreover, actual end of life discussions in patients with IPF were conducted later than the physician-perceived ideal timing. Among the barriers identified, few established treatment and difficulty in predicting prognosis [odds ratio (OR) 2.0; p = 0.04], discrepancies in understanding and care goals among patients, family and medical staff (OR 2.2; p = 0.03) and inadequate communication about goal of care (OR 2.3; p = 0.003) were significantly associated with the physician-perceived difficulties in providing palliative care for patients with IPF.

Conclusions: Pulmonologists experienced greater difficulty in providing palliative care to patients with IPF than to those with lung cancer. Clinical studies on the optimal palliative care for patients with IPF are urgently required.

Key Message: Pulmonologists experienced greater difficulty in providing palliative care to patients with IPF than to those with lung cancer. Clinical studies on the optimal palliative care for patients with IPF are urgently required.

Keywords: advance care planning; end of life care; idiopathic pulmonary fibrosis; palliative care

Running Title: Palliative care for idiopathic pulmonary fibrosis patients

INTRODUCTION

Idiopathic pulmonary fibrosis (IPF) is the most prevalent fibrotic interstitial lung disease (ILD), which has worse outcomes than most malignancies with a mean survival period from diagnosis ranging from 2 to 3 years .[1-5] Patients with IPF have been challenging to manage given that few medical therapies have shown any survival benefit, while lung transplantation remains the only option to improve survival .[1-6] Palliative care is thus an important consideration for patients with IPF.

The World Health Organization (WHO) recommends early palliative care to 'improve the quality of life of patients and their family facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual'.[7] Patients with IPF suffer from high symptom burden and poor quality of life as the disease progresses.[1-5] IPF is characterised by dyspnoea, cough, anxiety and depression and most patients with IPF ultimately need supplemental oxygen therapy.[1-5] The need for palliative care often increases as the disease progresses. Accordingly, studies have shown that palliative care needs of patients with IPF and their caregivers are not inferior to those with malignancies.[8,9] Although the current IPF guidelines recommend palliative care and symptom-based approach as an adjunct to disease-focused care[3], most patients with IPF do not receive optimal palliative care throughout the course of the disease or even at the end of life.[10,11,12]

Preliminary studies on a small number of specific individuals, i.e. patients receiving lung transplantation, suggest various reasons for why patients with IPF do not receive optimal palliative care, including fear that discussions regarding end of life care will diminish the patients' hope, physician discomfort, inclusion of caregivers and family members during discussions[13,14] and physician uncertainty regarding palliative care administration.[11] Although narrative reviews have listed several barriers to the provision of optimal palliative care for patients with IPF[15,16], to our knowledge, no study has systemically investigated the physician's view on barriers to optimal palliative care for patients with IPF and how such barriers affect their daily practice.

We thus developed a survey that would characterise the practice of Japanese pulmonologist's regarding

palliative care and end of life communication for patients with IPF and identify perceived difficulties and barriers thereto.

METHODS

Participant recruitment and procedure

The self-administered questionnaires were sent by mail to a representative sample of pulmonologists and fellows of pulmonary medicine working in the Shizuoka prefecture, Japan, between December 2018 and March 2019. In this region, the Hamamatsu University School of Medicine utilized 15 general hospitals as training facilities, and it accounts for 78.9%, 15 of all 19 hospitals with a pulmonary division in this region; and centrally managed information of all physicians working at 15 hospitals. We thus obtained a list of all 135 pulmonologists and fellows of pulmonary medicine from the university. Physicians who had clinical experience within the previous year were eligible for this survey. The participants were asked to return the questionnaire within 4 months. No compensation was provided.

Questionnaire development

The self-administered questionnaire utilised herein was developed based on a review of the literature.[12-21] The study group, which consisted of one palliative care specialist and five pulmonologists, developed the questionnaire to ensure clarity and comprehensiveness. Face validity was confirmed with a pilot test on 15 pulmonologists.

The survey questionnaire included (1) current practice of palliative care for patients with IPF (10 questions); (2) physician-perceived difficulties in providing palliative care for patients with IPF and lung cancer (5 questions); (3) optimal and actual timing of end of life communication between patients with IPF and attending physicians (2 questions) and (4) perceived barriers to palliative care for patients with IPF (37 questions). The respondents were requested to rate their agreement with each question on a 5-point Likert scale (1, not at all; 2, rarely; 3, occasionally; 4, often; and 5, always). For the questions regarding optimal timing of end of life communication, the respondents were requested to select one

answer from seven choices ranging from ‘at the time of diagnosis’ to ‘do not discuss’. For questions concerning barriers, the respondents were requested to rate their agreement with each barrier on a 5-point Likert scale (1, not a barrier at all; 2, minimal barrier; 3, moderate barrier; 4, large barrier; 5, huge barrier) reference. The following data were also collected to characterise the participants: age, gender, years of practice, type of hospital and number of patients with ILD and IPF treated per year. Experience with the national palliative care education programme (i.e. the PEACE programme) was also recorded.[22]

Statistical analysis

All returned questionnaires were analysed. The frequencies and percentages of eligible participants’ responses to each item were calculated. Student t-tests were used to compare perceived difficulties to palliative care for IPF and lung cancer, while Mann–Whitney *U* tests were employed to compare the results of ideal vs. actual timing of communication. Based on a previous study, barriers were considered significant when the sum of the percentage for ‘large barrier’ and ‘huge barrier’ was more than 60% in questions regarding barriers to palliative care.[14] To summarise the data, questions regarding barriers were categorised into six subscales based on exploratory factor analyses with varimax rotation and Cronbach’s alpha coefficient calculation. A total of 21 barriers from the initial 34 barriers were further analysed. Mean subscale scores for each item were calculated, with higher scores indicating a higher perceived barrier. To explore determinants of physician’s attitudes, the six barrier subscales were analysed through regression analysis using the physician-perceived difficulty score as the independent variable and barrier variables as the explanatory variable while adjusting for physician demographic factors, such as clinical experience and age. All statistical analyses were performed using EZR (Saitama Medical Center, Jichi Medical University, Saitama, Japan), a graphical user interface for R (The R Foundation for Statistical Computing, Vienna, Austria)[23], with statistical significance being set at $p < 0.05$.

This study was approved by the Hamamatsu University School of Medicine Ethics Board, Hamamatsu, Japan (18-214). Consent was assumed by the completion of the survey.

RESULT

Participant characteristics

Among the 135 eligible participants, 130 completed the questionnaire (participation rate of 96.3%). The characteristics of participants are summarised in Table 1. Most participants (98.5%) had cared for at least one patient with IPF within the last year.

Practice of palliative care for patients with IPF

Among the participants, 93% and 83% stated that patients with IPF often or always complained of dyspnoea and cough, respectively (Table 2). In addition, 79% reported the patients had anxiety or depression occasionally, often, or always; while the number of the IPF patients who complained of pain was less than 20%. For the management of cough, 74.6% used dextromethorphan, while 19.2% used morphine. Majority of the participants (73%) stated that they had occasionally or often discussed about end of life care with patients with IPF. However, approximately 70% of the participants reported that end of life care was only discussed with the family excluding the patient and that information given to the patients or family members was occasionally or often changed, i.e., the different levels of information are provided to patients vs family (Table 2).

Difficulty in providing palliative care for patients with IPF and lung cancer

As shown in Figure 1, physicians found it significantly more difficult to provide palliative care to patients with IPF than to patients with lung cancer [IPF 3.7, standard deviation (SD), 0.85 vs. lung cancer 2.9, SD: 0.85; effect size (ES), 0.94; $p < 0.001$]. Among the participants, 70% reported that they 'always' or 'frequently' experienced difficulty in providing palliative care to patients with IPF, with 31.5% answering 'occasionally' and 8.5% answering 'rarely' (Figure 1). Moreover, physicians were significantly less likely to use opioids for dyspnoea on exertion (IPF 2.55, SD: 0.92 vs. lung cancer 3.99, SD: 1.03; ES, 1.47; $p < 0.001$) and for dyspnoea at rest (IPF 2.77, SD: 0.95 vs. lung cancer 4.18, SD:

0.94; ES, 1.49; $p < 0.001$) in patients with IPF than in those with lung cancer (Figure 1).

Ideal and actual timing of end of life communication with patients having IPF

Actual end of life discussions with patients were conducted significantly later than the physician-perceived ideal timing for the same ($p < 0.001$) (Figure 2). Approximately half of the participants (46.9%) stated that the ideal timing was during initiation of home oxygen therapy, followed by hospitalisation due to acute exacerbation of IPF (19%) and upon diagnosis of IPF (10%) (Figure 2). However, the actual timing of end of life discussions occurred during hospitalisation due to acute exacerbation (59.1%), followed by initiation of home oxygen therapy (20%) and upon diagnosis of IPF (3.6%) (Figure 2).

Barriers to palliative care for patients with IPF

Barriers to palliative care were identified across six domains (Table 3), with the greatest number of barriers identified under the 'few established treatment and difficulty in predicting prognosis' and 'discrepancies in understanding and care goals among patients, family and medical staff' subscales. Few established treatment to relieve the symptoms (71.6%), difficult to predict the prognosis or disease progression (66.9%), few established treatment to improve survival (66.1%) and disagreements between family and patient about care goals (60.0%) were highlighted as significant physician-perceived barriers for providing palliative care to patients with IPF.

Determinants of physician-reported difficulties: association between perceived barriers

With regard to respondent background, younger age, type of facility (small) and larger number of ILD deaths per year were significantly associated with the difficulty in providing palliative care for patients with IPF (data not shown). Figure 3 demonstrates the results of nominal logistic regression analysis after adjusting for respondent background (age, type of facility and number of ILD deaths per year). Accordingly, 'few established treatment and difficulty in predicting prognosis' [odds ratio (OR) 2.0; $p = 0.04$], 'discrepancies in understanding and care goals among patients, family and medical staff' (OR 2.2;

p = 0.03) and 'inadequate communication about goal of care' (OR 2.3, p = 0.003) were significantly associated with difficulty in providing palliative care for patients with IPF.

DISCUSSION

To our knowledge, this has been the first study to systemically investigate the clinical practice, difficulties and perceived barriers related to palliative care for patients with IPF from the perspective of respiratory physicians.

One important finding of the present study was that physicians felt greater difficulty in providing palliative care for patients with IPF than for those with lung cancer. A possible interpretation is that palliative care for patients with IPF is predominantly provided by respiratory physicians in Japan, and team approach including respiratory nurse, psychologists, and palliative care team is uncommon compared with in case of cancer patients. An epidemiological study revealed that patients with IPF received lower rates of palliative care than those with lung cancer.[11] Moreover, a recent study revealed that only 13.7% of patients with IPF had been referred to specialised palliative care services, a majority of whom (71%) were referred within 1 month of their death.[10] These findings indicate that multifaceted interventions to improve access to palliative care for patients with IPF urgently needed.

Another important finding was the clarification of the three main areas that needed improvement. These barriers identified in this study are generally consistent with previous studies[8-12,15,16,21], while almost all (91.5%) respondents had received basic palliative care education programme. This strongly indicates mandatory education alone is less likely to completely overcome the barriers for implementation of palliative care.

First, although physicians very frequently experienced dyspnoea and cough, opioids were used less frequently in patients with IPF than in those with cancer. Moreover, the lack of an established treatment for symptom relief was one of the most important barriers participating physicians perceived and was significantly associated with their perceived difficulty in providing palliative care for patients with IPF. These findings are consistent with an empirical study in which patients with IPF experienced lesser

improvement in symptoms, such as dyspnoea, despite intensive palliative treatment compared to those with lung cancer.[11] To the best of our knowledge, only a few well-designed clinical trials have demonstrated the efficacy of pharmacological therapy in relieving dyspnoea among patients with IPF.[24] Thus, well-designed clinical trials that could establish medical treatment for dyspnoea relief in patients with IPF are of great value.

Second, this study revealed the difficulties in initiating end of life discussion with patients suffering from IPF. The survey indicated that end of life discussions were initiated later than ideally perceived by the physicians, although no observable difference in the frequencies of discussion regarding incurability and DNAR was found between patients with IPF and cancer. One probable reason of this phenomena could be the difficulty in predicting the prognosis of patients with IPF. Accordingly, our results showed that the difficulty in predicting disease progression was significantly associated with the difficulty in providing palliative care for patients with IPF. In cancer, on the other hand, multiple prognostic evaluation models are validated and available for clinical use to identify the appropriate timing for initiating end of life discussion.[25,26] Further studies are thus needed to develop a clinical model that could predict disease progression and survival and to identify the appropriate timing for end of life discussions among patients with IPF. On the other hand, prognosis itself is not an essential part of palliative care defined the WHO[7] and thus clinicians should note the role of prediction of patient prognosis does not mean that palliative care should not be provided to patients with better prognosis.

Third, inadequate and difficult communication in this population is another important barrier significantly association with physician difficulties. Although empirical research regarding communication issues in patients with IPF has been far limited, a recent small study revealed a discrepancy between the needs of the patients and medical staff such that patients with IPF and their families considered end of life or palliative care as important information, whereas medical staff failed to emphasise the same.[27] Inadequate, late and poor communication between patients and physicians have been well recognised in serious illnesses, such as advanced cancer and COPD, contributing to the suffering patients and family members endure.[28-31] Recent multiple randomised controlled trials to improve end of life communication have demonstrated that a structured intervention resulted in more,

297 earlier and better conversations and improved patient outcomes.[32-39] With regard to patients with IPF,
298 however, we believe that empirical studies regarding understanding the patient's view of their illness,
299 patient's preferences, prognostic information and goals of care have been very premature. As such, more
300 studies are undoubtfully needed.
301 Cultural aspects should be considered in an interpretation. This survey revealed that end-of-life decision
302 making was often performed only with families without patient involvement, and levels of information
303 were changed to patients vs families. The percentages of the Japanese physicians who reported they often
304 or always made decision making only with family excluding the patients was 35% in this survey vs. 8.1%
305 in Portugal survey; and those who reported they often or always changed the levels of information to
306 patients vs families was 30% in this survey vs. 1.4% in Portugal survey[18]. This tendency has been
307 traditionally regarded as family-centered decision making in East Asian culture. In the land-mark study
308 conducted in 2000 to compare physicians' attitude toward patient autonomy[40], only 17% of Japanese
309 physicians agreed that the patient should be first told and then the family (i.e., usually family first, then
310 patients). The corresponding figures of U.S. physicians in the 2000 survey were 80%. In 2015 survey,
311 however, these figures in Japanese, Korean, and Taiwanese physicians were around 80%, and being very
312 close to those of U.S. physicians in the 2000 survey[41]. Patient autonomy is thus increasingly acknowledged
313 in East Asian culture especially in the situation of malignancy. On the other hand, the cross-cultural survey
314 indicated that half of the Japanese, Korean, and Taiwanese physicians maintained that they should not
315 disclose bad news to patients if the family disagrees. In East Asia, the family-centered style in end-of-life
316 decision making was and is still in part major, but the situation is rapidly changing such as rapid spread
317 of patient-centered advance care planning[42]. Careful observation is needed to determine what physician
318 behaviors are regarded as being culturally norm or helpful in end-of-life communication in East Asian
319 context.
320 The strengths of the present study include the high response rate (96.3%) and representativeness of the
321 sample (covered 78.9% of all pulmonary physicians within the prefecture).
322 Some limitations of the present study are worth noting. First, considering that this study was a physician
323 survey, patient and family views had not been investigated. Future studies involving patients with IPF

and their family could obtain more insight regarding palliative care for IPF. Second, this survey was conducted in one prefecture in Japan, which might not always be representative of a national sample. Third, given that barrier questionnaires were adopted from previous studies on intensive care settings[17], there might be a lack of factors that other pulmonologists specifically consider important. Forth, we did not adopt open-ended questions or qualitative approach, resulting in lack of opportunity to obtain complex input. Fifth, some respondents actually treated limited number of patients with IPF. Finally, clinical practice related to non-respiratory symptoms, such as psychological distress and pain, were not investigated.

CONCLUSIONS

Pulmonary physicians experienced greater difficulty in palliative care for patients with IPF than that for patients with lung cancer. As such, well-designed studies aimed towards establishing appropriate medical treatment for dyspnoea relief in patients with IPF, developing a prognostic model to identify the appropriate timing for initiating end of life discussion and determining the efficacy of communication interventions are urgently required.

DISCLOSURE STATEMENT:

Authorship

N.A., T.F. and T.M. contributed to the study concept; N.A., T.F., Y.N., N.I. and T.S. designed the research; N.A., T.F., H.Y., H.H., Y.S., M.K., K.F., N.E., Y.N., N.I. and T.S. contributed to the acquisition of the data; K.M. and T.M. contributed to data analysis; N.A., T.F. and T.M. wrote the initial and final drafts of the manuscript; N.A., T.F., T.M., H.Y., H.H., Y.S., M.K., K.F., N.E., Y.N., N.I. and T.S. revised the drafts of the manuscript; and all authors approved the final version of the manuscript.

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Declaration of conflicts of interest

The authors declare that there is no conflict of interest.

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Tables

Table 1. Participant characteristics.

	All participants (n = 130)
Sex	
male	114 (87.7)
female	16 (12.3)
Age	
20s	18 (13.8)
30s	54 (41.5)
40s	34 (26.2)
50s	19 (14.6)
60s	5 (3.8)
Years of practice (median, range)	12.5 (1–42)
Type of hospital	
University hospital	30 (23.1)
General hospital > 500 beds	73 (56.2)
General hospital < 500 beds	27 (20.8)
Experience with the national palliative care education programme	119 (91.5)
Number of ILD patients cared in the last year	
0	0
1–4	11 (8.5)
5–9	15 (11.5)
>10	104 (80)
Number of IPF patients cared for within the last year	
0	2 (1.5)
1–4	53 (40.8)
5–9	41 (31.5)
>10	34 (26.2)
Number of ILD patients who died within the last year	
0	21 (16.2)
1–4	83 (63.8)
5–9	20 (15.4)
>10	6 (4.6)
Number of IPF patients died in the last year	
0	44 (33.8)
1–4	79 (60.8)
5–9	7 (5.4)
>10	0

S.D.: standard deviation, ILD, interstitial lung disease; IPF, idiopathic pulmonary fibrosis

Table 2. Current status of palliative care for patients with IPF.

Frequency of IPF symptoms: how often patients complained	Never	Rarely	Occasionally	Often	Always
Dyspnoea	0	0	6.9	71.5	21.5
Cough	0	0	16.9	67.7	15.4
Anxiety/depression	1.5	20.0	60.8	16.2	1.5
Pain	19.2	53.8	15.4	0.8	0.8
Frequency of end-of-life communication					
How often was end-of-life care discussed	1.5	21.5	39.2	33.8	3.8
Only with family, and excluded the patient	5.4	21.5	37.7	31.5	3.8
How often was information given to patients or family members changed	3.8	26.9	39.2	27.7	2.3
How often did health care professionals decide on end-of-life care without including the patients or family members	44.6	46.2	6.9	1.5	0.8

IPF, idiopathic pulmonary fibrosis

Data are expressed as percentages.

458 **Table 3. Barriers to palliative care of patients with IPF.**
459

Few established treatment and difficulty in predicting prognosis (α = 0.80)	Not	Minimal	Moderate	Large	Huge
Difficult to predict the prognosis or disease progression[a]	0.8	3.8	28.5	44.6	22.3
Few established treatments to improve survival[a]	2.3	13.1	18.5	39.2	26.9
Few established treatments to relieve the symptoms[a]	0.8	4.6	23.1	43.1	28.5
Doctors involved in outpatient care and inpatient care are different	13.1	30.8	28.5	18.5	9.2
Discrepancies in understanding and care goals among patients, family and medical staff (α = 0.96)	Not	Minimal	Moderate	Large	Huge
Disagreements between family and doctors about care goals	2.3	13.8	25.4	37.7	21.5
Disagreements between family and patient about care goals[a]	0.8	14.6	24.6	40.0	20.0
There is no nearby clinic that can provide palliative care at home	3.1	12.3	32.3	37.7	14.6
Poor understanding of patient backgrounds	4.6	14.6	33.8	33.8	13.1
Patient's lack of knowledge / understanding about disease	1.5	10.0	35.4	42.3	10.8
Family's lack of knowledge / understanding about disease	1.5	10.0	33.1	42.3	13.1
Inadequate communication about goal of care (α = 0.91)	Not	Minimal	Moderate	Large	Huge
Inadequate communication between physician and patient/families about appropriate goals of care	5.4	14.6	29.2	33.1	17.7
Inadequate communication within medical stuff about appropriate goals of care	8.5	19.2	30.0	30.8	11.5
Unrealistic physician expectations about efficacy of treatment of IPF	16.2	21.5	30.0	25.4	6.9
Physician reluctance to use opiates or sedatives for symptom management	11.5	29.2	24.6	26.2	8.5
Unrealistic expectations by patients (α = 0.82)	Not	Minimal	Moderate	Large	Huge
Unrealistic patient expectations about prognosis or likelihood of survival	3.8	33.8	33.8	40.0	10.8
Unrealistic patient expectations about efficacy of treatment of IPF	3.8	32.3	32.3	37.7	10.0
Unwillingness of patients to plan end-of-life care	1.5	35.4	35.4	39.2	12.3
Unrealistic expectations by the family (α = 0.98)	Not	Minimal	Moderate	Large	Huge
Unrealistic family expectations about prognosis or likelihood of survival	1.5	13.8	26.2	44.6	13.8
Unrealistic family expectations about efficacy of treatment of IPF	1.5	13.1	27	45.4	12.3
Lack of palliative care training of physicians (α = 0.88)	Not	Minimal	Moderate	Large	Huge
Insufficient physician training in symptom management of patients with IPF	2.3	14.6	36.2	37.7	9.2
Insufficient physician training in communication about end-of-life care issues	3.1	21.5	35.4	30.8	9.2

460 Data are expressed as percentages.

[a]Barriers considered significant.

Figure Legends

Figure 1. Differences in palliative care between patients with IPF and lung cancer

Bars show the mean with 95% confidence intervals.

Abbreviation: IPF, idiopathic pulmonary fibrosis

Figure 2. Ideal and actual timing of end-of-life communication in patients with IPF

Abbreviations: IPF, idiopathic pulmonary fibrosis

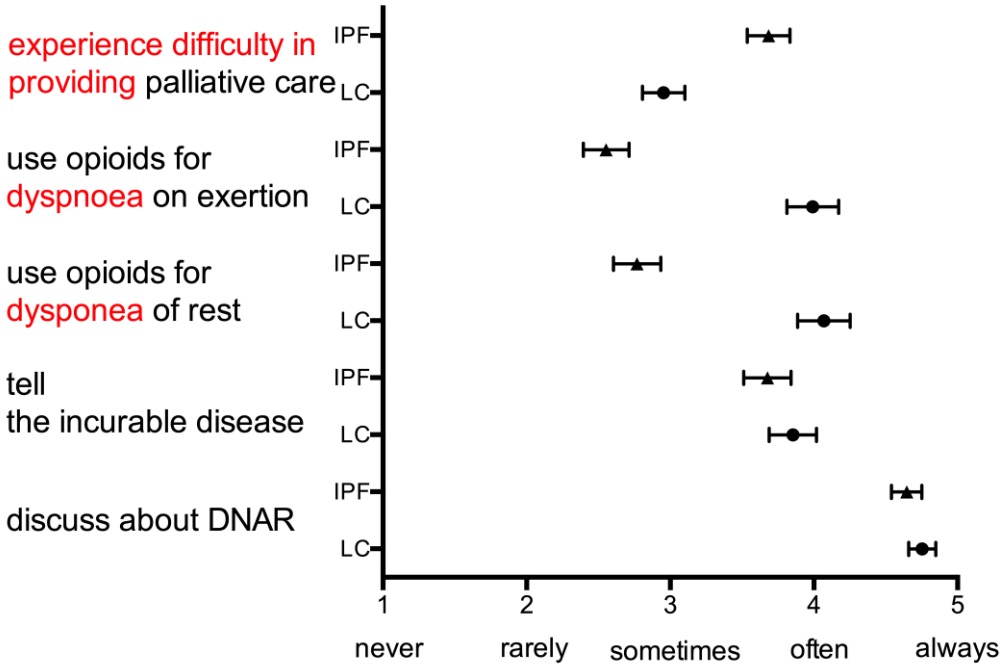
Figure 3. Nominal logistic regression analysis after adjusting for respondent background

The odds ratio (OR) with 95% confidence intervals is shown in each domain.

'Few established treatment and difficulty in predicting prognosis' (OR 2.0; p = 0.04), 'discrepancies in understanding and care goals among patients, family and medical staff' (OR 2.2; p value = 0.03) and 'inadequate communication about goal of care' (OR 2.3; p = 0.003) were significantly associated with the difficulty in providing palliative care for patients with IPF.

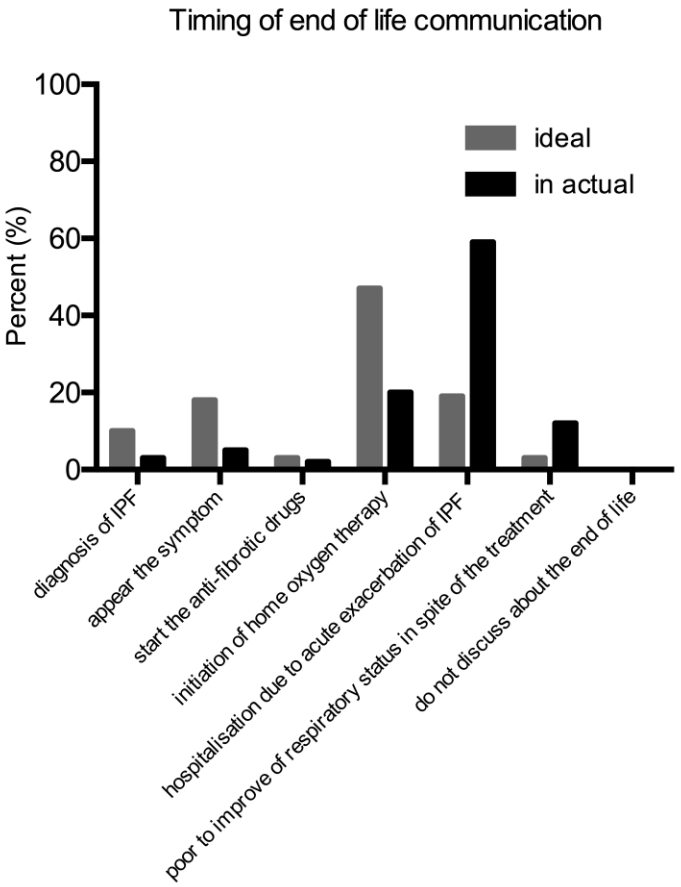
Abbreviations: IPF, idiopathic pulmonary fibrosis; OR, Odds ratio

Figure.1



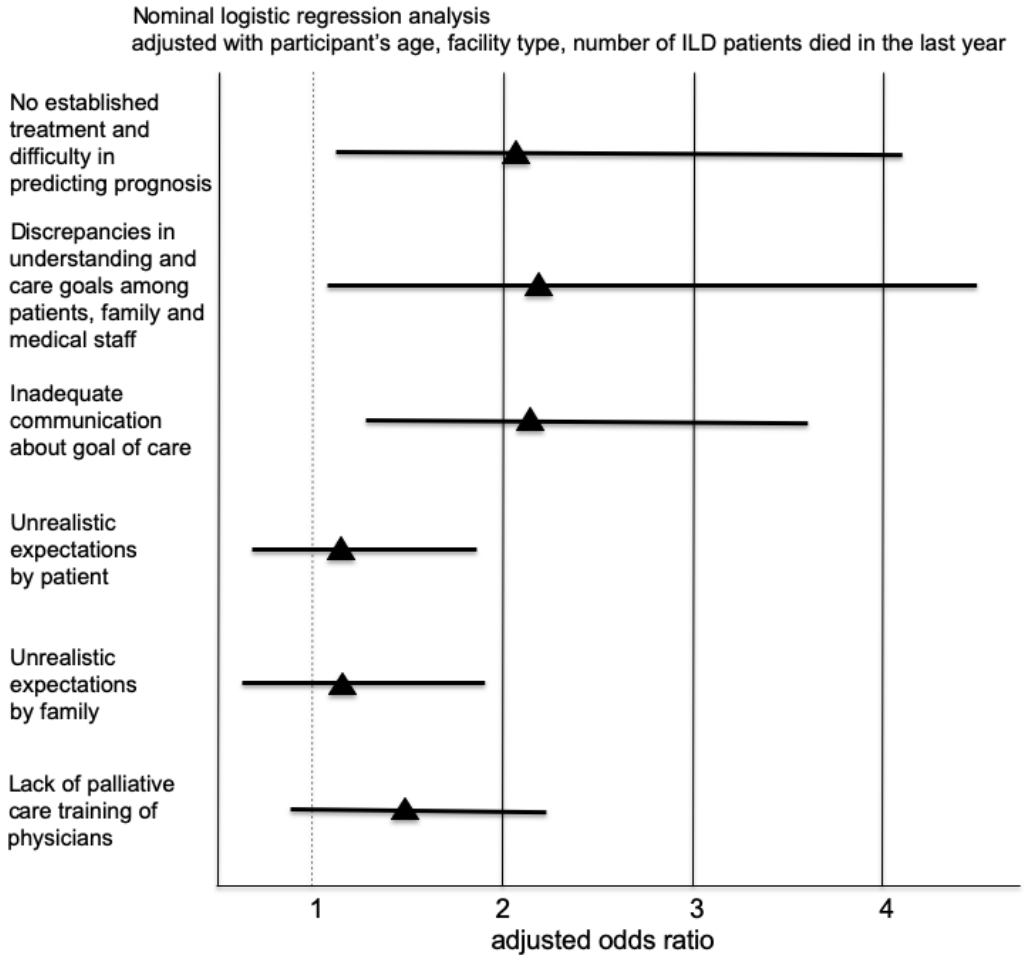
本文のfigure1の解説に沿って赤文字部分を修正してあります。

Figure.2



本文のfigure2の解説に沿って修正してあります。
Diagnosis → diagnosis of IPF
Start the home-oxygen therapy→ initiation of home oxygen therapy
Need hospitalization because of acute exacerbation of IPF
→hospitalization due to acute exacerbation of IPF

Figure.3


Nominal logistic regression analysis
adjusted with participant's age, facility type, number of ILD patients died in the last year
No established treatment and difficulty in predicting prognosis
Discrepancies in understanding and care goals among patients, family and medical staff
Inadequate communication about goal of care
Unrealistic expectations by patient
Unrealistic expectations by family
Lack of palliative care training of physicians
1
2
3
4
adjusted odds ratio