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Better Treatments for Breathlessness in Palliative and End of Life Care



Physicians attitudes and experiences of managing breathlessness in palliative, respiratory and end of life care



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DISCLOSURE

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Severe breathlessness in advanced illness



- **Chronic** or **refractory** breathlessness - disabling breathlessness which persists despite optimal disease management
- Associated with social isolation, high healthcare costs and poor prognosis
- Management options include non-pharmacological interventions. Pharmacological treatment options limited to moderate evidence in support of opioids
- Breathlessness often remains **under-recognised** and **undertreated**

Krajnik M, Hepgul N, Wilcock A, et al. BMC Pulm Med. 2022;22(1):41.

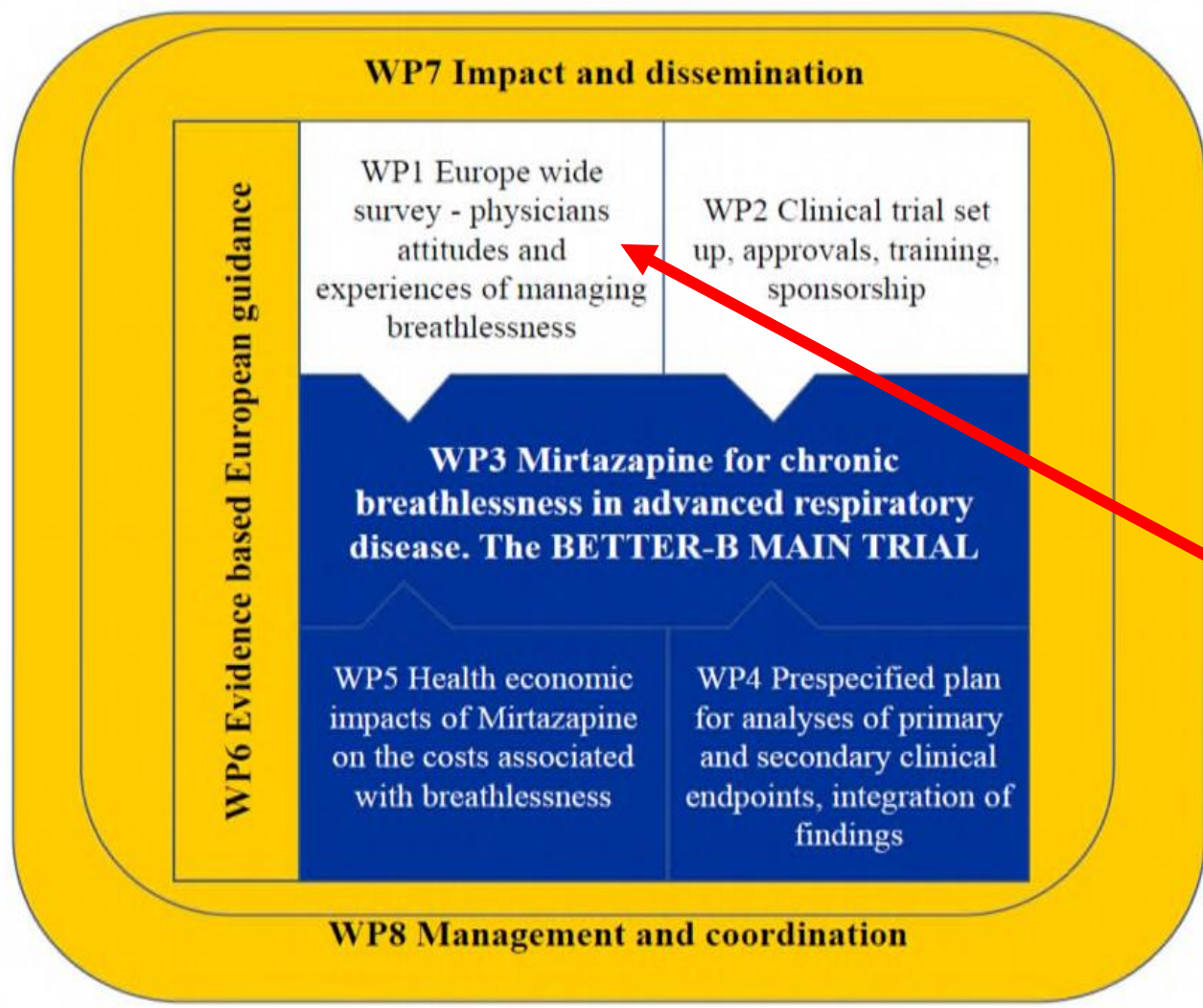
BETTER-B Consortium & Project

HORIZON
2020

PROJECT

BETTER-B

**BETTER TREATMENTS FOR
BREATHLESSNESS IN
PALLIATIVE AND END OF LIFE
CARE**



Objectives:

- Explore current practice and experiences of palliative and respiratory clinicians across Europe on the management of breathlessness in lung disease

WP1 Survey



AIM

1. To explore the management of chronic breathlessness by respiratory (RM) and palliative care (PC) physicians
2. To determine the influence of clinical practice guidelines on breathlessness management.

- WP1 physician's survey results: BMC Pulmonary Medicine (IF 3.32)

Krajnik et al. *BMC Pulmonary Medicine* (2022) 22:41
<https://doi.org/10.1186/s12890-022-01835-0>

BMC Pulmonary Medicine

RESEARCH

Open Access



Do guidelines influence breathlessness management in advanced lung diseases? A multinational survey of respiratory medicine and palliative care physicians

Małgorzata Krajnik^{1†}, Nilay Hepgul^{2†}, Andrew Wilcock³, Ewa Jassem⁴, Tomasz Bandurski⁵, Silvia Tanzi⁶, Steffen T. Simon⁷, Irene J. Higginson^{2†} and Caroline J. Jolley^{8*†} on behalf of the BETTER-B research consortium

Methods (1)



- Survey design was based on previous surveys and current literature
- The survey focused on:
 - respondent demographics
 - awareness and knowledge of local national or international guidelines/recommendations on PC for non-malignant lung diseases
 - use of a breathlessness score in clinical practice
 - non-pharmacological management strategies
 - pharmacological management strategies
 - attitudes towards referral to PC

Methods (2)

- Three case vignettes were developed:
 - **advanced COPD**
 - **fibrotic ILD (fILD)**
 - **lung cancer (LC)**
- Each patient presented with **mMRC scale 3-4 breathlessness**
(3 = Stops for breath after walking 100 yards or after a few minutes on level ground; 4 = Too breathless to leave the house, or breathless when dressing/undressing) despite optimal management of the underlying disease
- Current anxiety or depression not indicated in any of the three vignettes
- Preferred management indicated on Likert scales

MARTIN

Martin is a 75 year old man who is an ex-smoker with very severe COPD (i.e. GOLD grade 4, group D), treated optimally according to the GOLD guidelines (2019). He has been prescribed home nebulisers and long-term oxygen therapy (LTOT) for the past 8 months. His FEV1 is 0.8L (27% predicted), SpO2 is 91% on 2L/min O2, and he is currently normocapnic.

Last winter Martin needed non-invasive ventilation for acute hypercapnic respiratory failure, but he has never been intubated. Martin is now breathless at rest, and severely deconditioned. His breathlessness becomes intolerable after just a few steps, even using ambulatory oxygen, and he can no longer walk across the room unaided.

TONY

Tony is a 61 year old man with severe idiopathic pulmonary fibrosis (IPF) still on antifibrotic treatment. His FVC is 50% predicted, DLCO 32% predicted and SpO2 is currently 92% at rest. He has no history of heart disease, anxiety or depression. Tony identifies worsening breathlessness as his main concern. Although not breathless at rest, he now struggles with breathlessness when walking, bathing, or speaking. Tony had been prescribed oxygen during a recent hospital admission but did not find that it helped his breathlessness.

HELENA

Helena is an 82 year old woman with advanced (stage 4) lung cancer being cared for at home. Her SpO2 is 96% breathing room air. She has a poor performance status (ECOG 2-3). She is breathless at rest and she has found this increasingly distressing over the past 2 weeks. She has no history of heart disease, anxiety or depression.

Krajnik M, Hepgul N, Wilcock A, et al. BMC Pulm Med. 2022;22(1):41.

Methods (3)



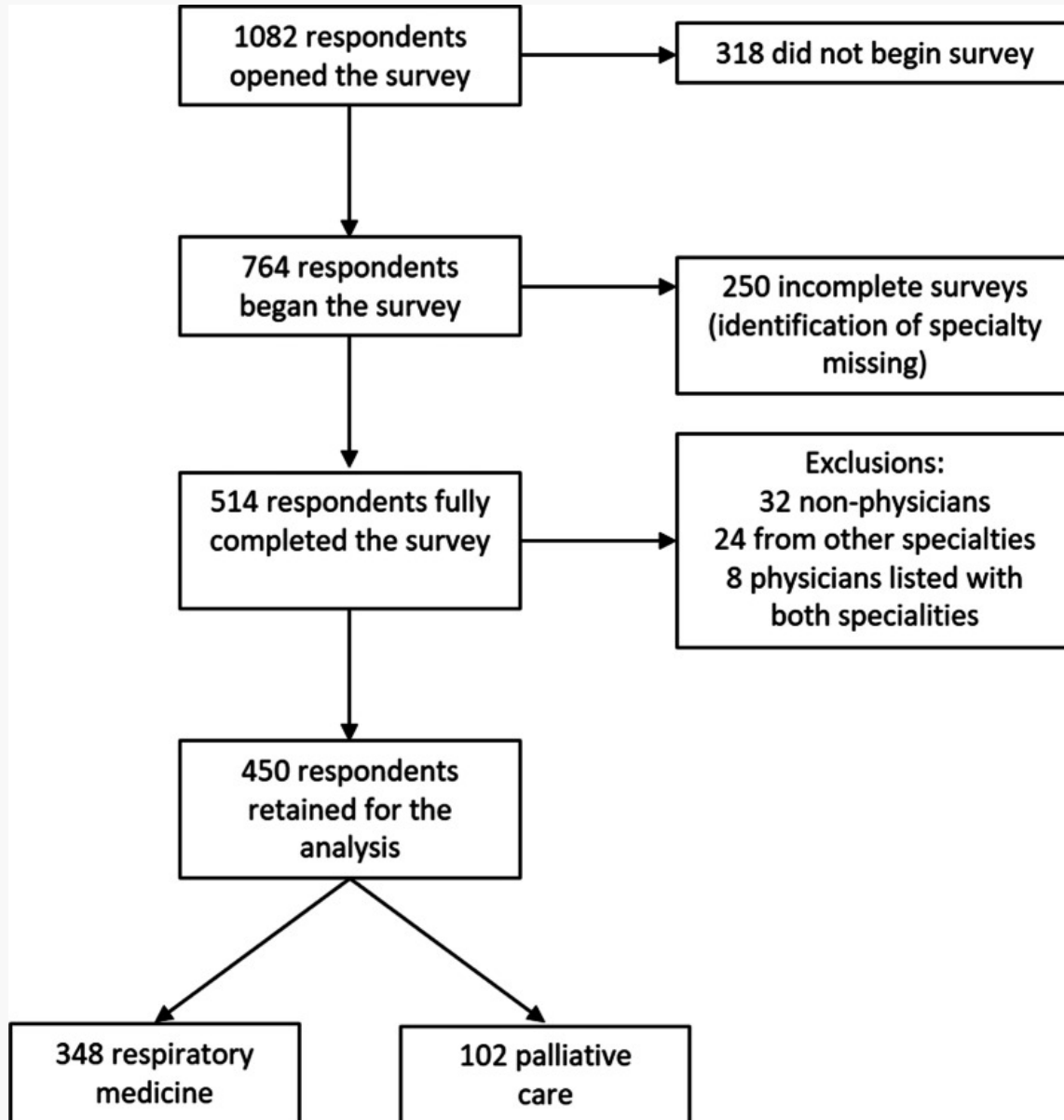
- The survey was piloted on 20 international experts from RM and PC
- 10 in-depth interviews were performed among physicians from Germany, Italy, Poland and the UK to minimise measurement error and ensure user acceptability, face validity and comprehensiveness
- The anonymous, voluntary online survey was launched on 23/04/2019 and closed on 06/08/2019
- Survey links were disseminated via newsletter mailing lists to members of the
 - European Respiratory Society (ERS),
 - European Association for Palliative Care (EAPC)
 - British Thoracic Society (BTS), and
 - As a news item feature on the Palliative Care Formulary (PCF) website.

Methods (4)



- Obtained ethical approval from the KCL Research Ethics Committee (REC) (reference no: MRA-18/19-11108). Survey received Minimal Risk Registration from the REC.
- KCL had responsibility for the survey which was held securely there. Responsibility and governance were not delegated to any of the other partners.
- Physicians were informed that by completing the survey, they provided informed consent for use of their anonymised data.

Results



450 evaluable responses were included in the final analyses:
348 (77%) RM
102 (23%) PC physicians

Krajnik M, Hepgul N, Wilcock A, Jassem E, Bandurski T, Tanzi S, Simon ST, Higginson IJ, Jolley CJ; BETTER-B research consortium. BMC Pulm Med. 2022;22(1):41.

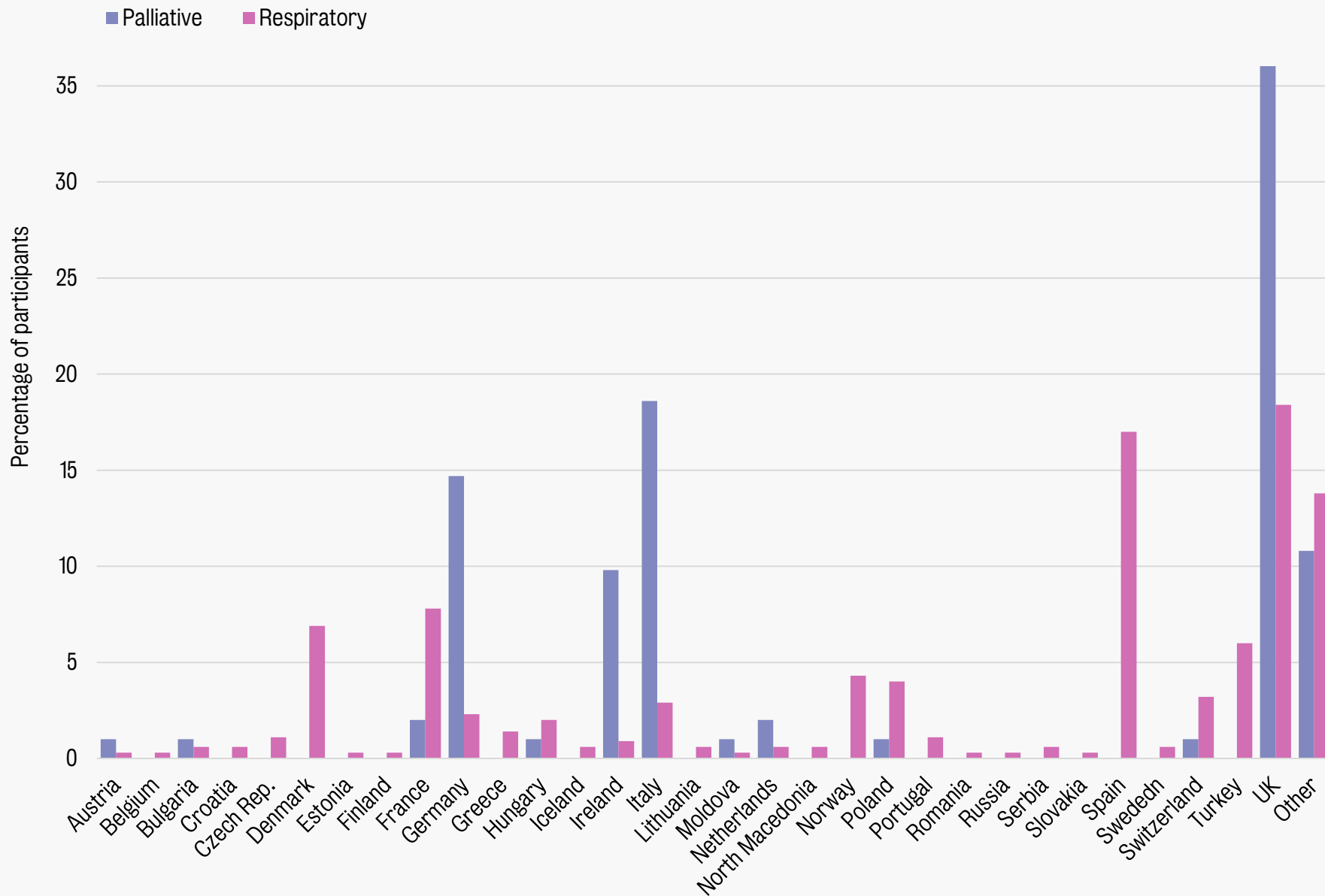
Respondent characteristics - 1

| | RM (n=348) | PC (n=102) | Specialties compared (χ^2) p value |
|-------------------------------|------------|------------|---|
| AGE | | | |
| 25–35 | 55 (16%) | 19 (19%) | p = 0.181 |
| 36–45 | 123 (35%) | 33 (32%) | |
| 46–55 | 86 (25%) | 33 (32%) | |
| > 56 | 84 (24%) | 16 (16%) | |
| GRADE | | | |
| Consultant/specialist | 312 (90%) | 81 (79%) | p = 0.006 |
| Doctor in specialist training | 36 (10%) | 21 (21%) | |
| YEARS IN SPECIALTY | | | |
| <5 | 41 (12%) | 21 (21%) | p= 0.001 |
| 6-10 | 75 (22%) | 23 (23%) | |
| 11-20 | 101 (29%) | 40 (39%) | |
| >21 | 131 (38%) | 18 (18%) | |
| SETTINGS OF PRACTICE | | | |
| Hospital inpatient | 295 (85%) | 54 (53%) | p < 0.001 |
| Outpatient | 218 (63%) | 37 (36%) | p < 0.001 |
| Home care | 11 (3%) | 39 (38%) | p < 0.001 |
| Private practice | 56 (16%) | 4 (4%) | p = 0.001 |
| Hospice/PC unit | 4 (1%) | 68 (67%) | p < 0.001 |
| Other | 8 (2%) | 5 (5%) | p = 0.167 |

Respondent characteristics - 2

| | RM (n=348) | PC (n=102) | Specialties compared (χ^2) p value |
|----------------------------------|------------|------------|---|
| No. of severe COPD pts seen/year | | | p < 0.001 |
| None | 12 (3%) | 7 (7%) | |
| 1– 10 | 87 (25%) | 43 (42%) | |
| 11 – 50 | 162 (47%) | 43 (42%) | |
| 51–100 | 57 (16%) | 7 (7%) | |
| > 101 | | | |
| No. of severe fILD pts seen/year | | | p < 0.001 |
| None | 24 (7%) | 15 (15%) | |
| 1– 5 | 118 (34%) | 48 (47%) | |
| 6 – 10 | 97 (28%) | 22 (22%) | |
| 11 – 20 | 58 (17%) | 12 (12%) | |
| > 20 | 51 (15%) | 5 (5%) | |
| No. of advanced LC pts seen/year | | | p < 0.001 |
| None | 48 (14%) | - | |
| 1– 10 | 123 (35%) | 11 (11%) | |
| 11 – 50 | 131 (37%) | 42 (41%) | |
| 51–100 | 28 (8%) | 33 (32%) | |
| > 101 | 18 (5%) | 16 (16%) | |

PC and RM physicians differed according to grade, years in their specialty, settings in which they work, and numbers of patients seen.



RM physicians practice across 31 and PC across 13 European countries. A further 59 (13%) responses were from non-European countries including India, USA and several South American countries.

We compared RM & PC responses, and explored if management varied with knowledge of palliative care guidelines for non-malignant lung diseases.

1

How chronic breathlessness is managed by RM and PC physicians

Results - non-pharmacological management (1)

| | COPD | | | fILD | | | LC | | |
|---------------------------------|------------|-----------|----------------|------------|-----------|----------------|------------|------------|----------------|
| | RM (n=336) | PC (n=95) | (χ^2) p | RM (n=324) | PC (n=87) | (χ^2) p | RM (n=301) | PC (n=102) | (χ^2) p |
| Pulmonary rehabilitation | | | | | | | | | |
| Often/always | 226 (67%) | 27 (28%) | p<0.001 | 181 (56%) | 26 (30%) | p<0.001 | 32 (11%) | 10 (10%) | p=0.602 |
| Rarely/sometimes | 101 (30%) | 43 (45%) | | 125 (39%) | 43 (49%) | | 121 (40%) | 36 (35%) | |
| Never | 9 (3%) | 25 (26%) | | 18 (6%) | 18 (21%) | | 148 (49%) | 56 (55%) | |
| Physical activity | | | | | | | | | |
| Often/always | 240 (71%) | 33 (35%) | p<0.001 | 199 (61%) | 27 (31%) | p<0.001 | 70 (23%) | 18 (18%) | p=0.453 |
| Rarely/sometimes | 87 (26%) | 47 (50%) | | 111 (34%) | 46 (53%) | | 157 (52%) | 55 (54%) | |
| Never | 9 (3%) | 15 (16%) | | 14 (4%) | 14 (16%) | | 74 (25%) | 29 (28%) | |
| Electric handheld fan | | | | | | | | | |
| Often/always | 61 (18%) | 63 (66%) | p<0.001 | 55 (17%) | 56 (64%) | p<0.001 | 59 (20%) | 64 (63%) | p<0.001 |
| Rarely/sometimes | 93 (28%) | 20 (21%) | | 85 (26%) | 18 (21%) | | 71 (24%) | 22 (21%) | |
| Never | 182 (54%) | 12 (13%) | | 184 (57%) | 13 (15%) | | 170 (57%) | 16 (16%) | |
| Breathing techniques | | | | | | | | | |
| Often/always | 195 (58%) | 69 (73%) | p=0.010 | 137 (42%) | 60 (69%) | p<0.001 | 85 (28%) | 62 (61%) | p<0.001 |
| Rarely/sometimes | 115 (34%) | 17 (18%) | | 134 (41%) | 18 (21%) | | 145 (48%) | 27 (27%) | |
| Never | 26 (8%) | 9 (10%) | | 53 (16%) | 9 (10%) | | 71 (24%) | 13 (13%) | |

Results - non-pharmacological management (2)

| | COPD | | | fILD | | | LC | | |
|---|------------|-----------|----------------|------------|-----------|----------------|------------|------------|----------------|
| | RM (n=336) | PC (n=95) | (χ^2) p | RM (n=324) | PC (n=87) | (χ^2) p | RM (n=301) | PC (n=102) | (χ^2) p |
| Respiratory muscle training | | | | | | | | | |
| Often/always | 153 (46%) | 17 (18%) | P < 0.001 | 114 (35%) | 23 (26%) | P = 0.004 | 35 (12%) | 17 (17%) | P = 0.411 |
| Rarely/sometimes | 118 (35%) | 42 (44%) | | 134 (41%) | 28 (32%) | | 126 (42%) | 39 (38%) | |
| Never | 65 (19%) | 36 (38%) | | 76 (24%) | 36 (41%) | | 140 (47%) | 46 (45%) | |
| Body positioning to relieve breathlessness | | | | | | | | | |
| Often/always | 147 (44%) | 66 (70%) | p < 0.001 | 101 (31%) | 59 (68%) | p < 0.001 | 95 (32%) | 73 (72%) | p < 0.001 |
| Rarely/sometimes | 114 (34%) | 24 (25%) | | 123 (38%) | 23 (26%) | | 115 (38%) | 22 (22%) | |
| Never | 75 (22%) | 5 (5%) | | 100 (31%) | 5 (6%) | | 90 (30%) | 7 (7%) | |
| Walking aids | | | | | | | | | |
| Often/always | 149 (44%) | 63 (66%) | p < 0.001 | 111 (34%) | 54 (62%) | p < 0.001 | 102 (34%) | 65 (64%) | p < 0.001 |
| Rarely/sometimes | 132 (39%) | 26 (27%) | | 145 (45%) | 26 (30%) | | 129 (43%) | 29 (28%) | |
| Never | 55 (16%) | 6 (6%) | | 68 (21%) | 7 (8%) | | 70 (23%) | 8 (8%) | |
| Meditative interventions | | | | | | | | | |
| Often/always | 34 (10%) | 23 (24%) | p < 0.001 | 34 (11%) | 27 (31%) | p < 0.001 | 44 (15%) | 22 (22%) | p = 0.005 |
| Rarely/sometimes | 109 (32%) | 44 (46%) | | 108 (33%) | 34 (39%) | | 104 (35%) | 47 (46%) | |
| Never | 193 (57%) | 28 (30%) | | 182 (56%) | 26 (30%) | | 153 (51%) | 33 (32%) | |
| Cognitive/emotional interventions | | | | | | | | | |
| Often./always | 48 (14%) | 28 (39%) | p = 0.001 | 49 (15%) | 29 (33%) | p = 0.001 | 75 (25%) | 31 (30%) | p = 0.195 |
| Rarely/sometimes | 162 (48%) | 45 (47%) | | 152 (47%) | 34 (39%) | | 124 (41%) | 46 (45%) | |
| Never | 126 (38%) | 22 (23%) | | 123 (38%) | 24 (28%) | | 102 (34%) | 25 (25%) | |

Results – non-pharmacological management (3)

For chronic breathlessness in COPD and fILD:

- RM most commonly recommended (“often or always”) - physical activity (COPD 71%, fILD 61%), pulmonary rehabilitation (COPD 67%, fILD 56%) and breathing techniques (COPD 58%, fILD 42%).
- By contrast, PC physicians favoured breathing techniques (COPD 73%, fILD 69%), body positioning (COPD 70%, fILD 68%) and the handheld fan (COPD 66%, fILD 64%).

For chronic breathlessness in LC:

- PC physicians most commonly recommended body positioning, which was selected by fewer RM physicians (72% vs. 32%, $p < 0.001$).
- Half of physicians RM/PC reported only “rarely or sometimes” recommending physical activity (RM 52%, PC 54%,) and one fourth - „never” (RM 25%, PC 28%), $p = 0.453$.
- Half of physicians RM/PC “never” recommended pulmonary rehabilitation (RM 49%, PC 55%, $p = 0.602$)

For chronic breathlessness in COPD, fILD and LC:

- More than half of RM physicians reported “never” recommending use of a handheld fan (contrary - >60% PC „often/always”)

Results – pharmacological management (1)

| | COPD | | | fILD | | | Lung Cancer | | |
|------------------------|---------------|--------------|---|---------------|--------------|---|---------------|---------------|---|
| | RM (n=336) | PC (n=95) | Specialties compared (χ^2) p value | RM (n=324) | PC (n=87) | Specialties compared (χ^2) p value | RM (n=300) | PC (n=102) | Specialties compared (χ^2) p value |
| Opioids | | | | | | | | | |
| Often or always | 132 (39%) | 87 (92%) | $p < 0.001$ | 117 (36%) | 72 (83%) | $p < 0.001$ | 227 (76%) | 97 (95%) | $p < 0.001$ |
| Rarely or sometimes | 150 (45%) | 7 (7%) | | 148 (46%) | 14 (16%) | | 59 (20%) | 5 (5%) | |
| Never | 54 (16%) | 1 (1%) | | 59 (18%) | 1 (1%) | | 14 (5%) | - | |
| Benzodiazepines | | | | | | | | | |
| Often or always | 34 (10%) | 31 (33%) | $p < 0.001$ | 40 (12%) | 22 (25%) | $p < 0.001$ | 108 (36%) | 47 (46%) | $p = 0.001$ |
| Rarely or sometimes | 194 (58%) | 60 (63%) | | 181 (56%) | 58 (67%) | | 142 (47%) | 52 (51%) | |
| Never | 108 (32%) | 4 (4%) | | 103 (32%) | 7 (8%) | | 50 (17%) | 3 (3%) | |
| Antidepressants | | | | | | | | | |
| Often or always | 62 (19%) | 10 (11%) | $p = 0.010$ | 39 (12%) | 11 (13%) | $p = 0.298$ | 63 (21%) | 15 (15%) | $p = 0.379$ |
| Rarely or sometimes | 201 (60%) | 73 (77%) | | 175 (54%) | 54 (62%) | | 173 (58%) | 63 (62%) | |
| Never | 73 (22%) | 12 (13%) | | 110 (34%) | 22 (25%) | | 64 (21%) | 24 (24%) | |

Results – pharmacological management (2)

- More PC than RM doctors „often/always” use **opioids** in COPD (92% vs. 39%), fILD (83% vs. 36%) and LC (95% vs. 76%) ($p < 0.001$)
- Conversely, larger proportions of RM physicians stated they would „never” initiate opioids in severe COPD (16% vs. 1%) or fILD (18% vs. 1%).
- 33% and 25% of PC respondents would “often or always” recommend **benzodiazepines** in the COPD and fILD vignettes respectively (compared to RM: 10% and 12%, $p < 0.001$)
- Benzodiazepines were less frequently selected by RM - 32% stated they would „never” select them for COPD and fILD (in LC – 17%).

Results - prioritised treatment

| | COPD | | | Fibrotic ILD | | | Lung Cancer | | |
|--|------------------|-----------------|--|-----------------|-----------------|-------------------------------------|------------------|-----------------|-------------------------------------|
| | RM (n=336) | PC (n=95) | RM vs PC (χ^2) p value | RM (n=324) | PC (n=87) | RM vs PC (χ^2) p value | RM (n=300) | PC (n=102) | RM vs PC (χ^2) p value |
| Drug treatment for breathlessness | 70 (21%) | 52 (55%) | p<0.001 | 78 (24%) | 35 (40%) | p<0.001 | 174 (58%) | 76 (75%) | p=0.001 |
| Re-assess O ₂ prescription | 29 (9%) | 2 (2%) | | 79 (24%) | 3 (3%) | | 23 (8%) | 1 (1%) | |
| Non-pharmacological, non-exercise intervention | 28 (8%) | 25 (26%) | | 28 (9%) | 24 (28%) | | 29 (10%) | 15 (15%) | |
| Exercise training / rehabilitation | 166 (49%) | 7 (7%) | | 96 (30%) | 16 (18%) | | 10 (3%) | 1 (1%) | |
| Psychological assessment | 31 (9%) | 5 (5%) | | 30 (9%) | 6 (7%) | | 58 (19%) | 7 (7%) | |
| Other | 12 (4%) | 4 (4%) | | 13 (4%) | 3 (3%) | | 6 (2%) | 2 (2%) | |

Krajnik M, Hepgul N, Wilcock A, et al. BMC Pulm Med. 2022;22(1):41.

Results - prioritised treatment & referrals to PC

Prioritised treatment

- RM physicians - exercise/rehabilitation for COPD (49%), and drug treatment for LC (58%). For fILD - balanced between drug treatment (24%), exercise/rehabilitation (30%), and re-assessment of oxygen prescription (24%).
- PC physicians - drug treatment regardless of diagnosis but especially for LC (75%).

Referrals to palliative care

Across all three vignettes, most RM physicians stated that they would refer such patients to PC to provide ongoing palliation of breathlessness and other symptoms or for advice about palliation of breathlessness (COPD 73%, fILD 71%, LC 93%).

Results – use of a breathlessness score and knowledge of PC practice guidelines (1)

| | RM (n=348) | PC (n=102) | Specialties compared (χ^2) p value |
|--|------------------|-----------------|---|
| Awareness of guidelines | | | |
| Yes, I know of them and have read them carefully | 53 (15%) | 17 (17%) | p=0.619 |
| Yes, I know of them but have only looked at them briefly | 86 (25%) | 23 (23%) | |
| Yes, I know of them but have not read them | 43 (12%) | 12 (12%) | |
| I know that no such guidelines/recommendations exist | 36 (10%) | 6 (6%) | |
| I'm not sure if such guidelines/recommendations exist or not | 130 (37%) | 44 (43%) | |
| Use of a breathlessness score | | | |
| Yes, I routinely use a breathlessness score | 215 (62%) | 13 (13%) | p<0.001 |
| Yes, I sometimes use a breathlessness score | 102 (29%) | 26 (26%) | |
| No, I never use a breathlessness score | 25 (7.0%) | 57 (56%) | |
| No, I don't know any breathlessness scores | 6 (2%) | 6 (6.0%) | |

Krajnik M, Hepgul N, Wilcock A, et al. *BMC Pulm Med.* 2022;22(1):41.

Results – use of a breathlessness score and knowledge of PC practice guidelines (2)

- Over two-thirds (62%) of RM physicians reported routinely using a **breathlessness score** in clinical practice (often or always) compared to 13% of PC physicians
- Only 15% of RM, and 17% of PC physicians reported that they knew of and had read carefully any local, national or international **guidelines or recommendations on PC for non-malignant respiratory diseases**
- Almost half of both specialties responded that no such guidelines/recommendations existed, or that they were unsure whether guidelines existed.

We compared RM & PC responses, and explored if management varied with knowledge of palliative care guidelines for non-malignant lung diseases

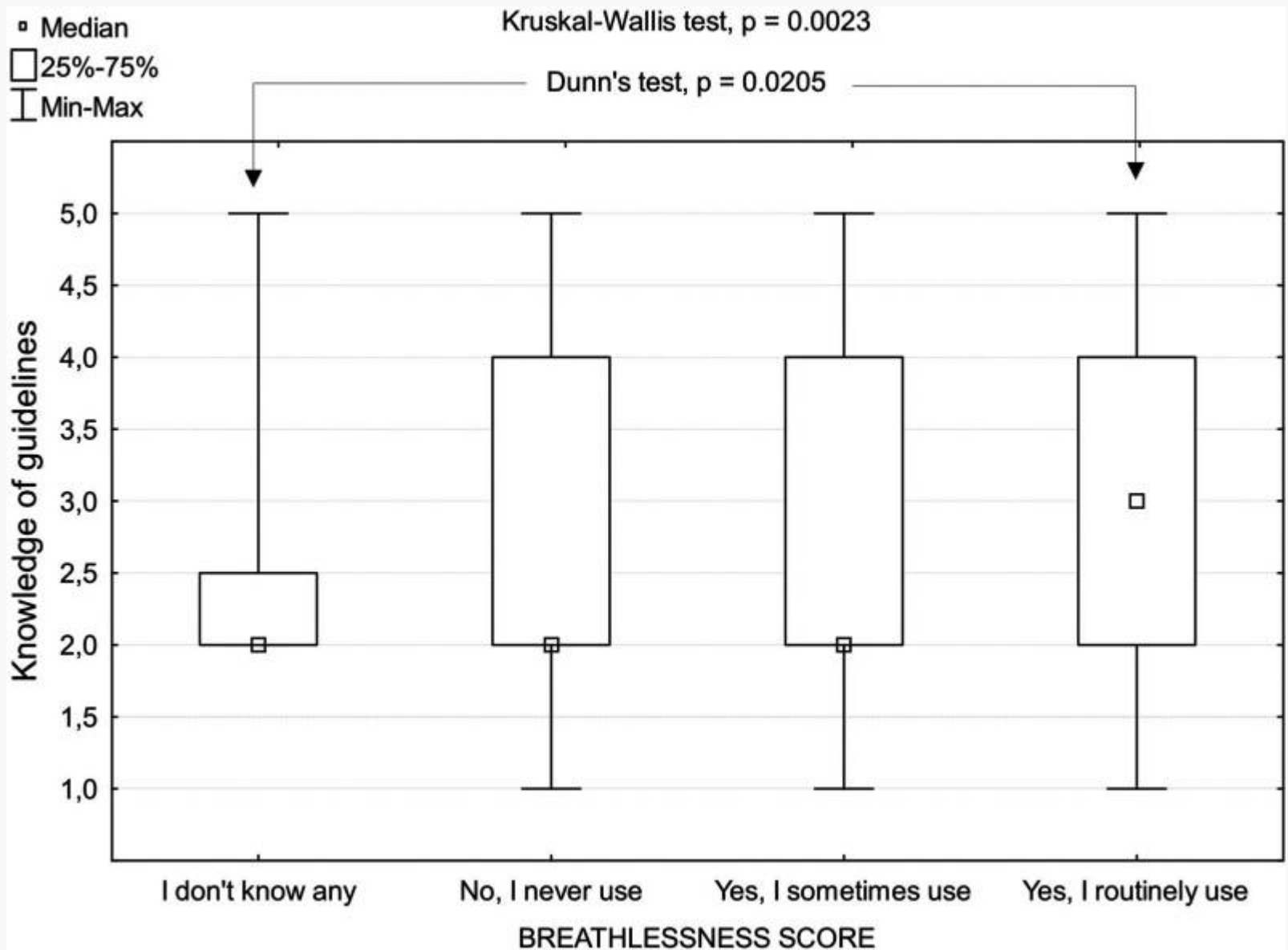
2

Whether knowledge of PC guidelines in non-malignant lung diseases influences clinical practice

Results - knowledge of guidelines and non-pharmacological management + breathlessness scoring

The 40% of respondents that reported reading carefully or at least looked at non-cancer palliative care guidelines briefly were significantly more likely to:

- **Routinely assess breathlessness** ($\chi^2 = 13.8$; $p=0.0002$)
- Use a **handheld fan in COPD** ($\chi^2 = 8.75$, $p=0.003$), **in fILD** ($\chi^2 = 4.85$, $p=0.028$) **and in LC** ($\chi^2 = 5.63$, $p=0.018$)
- **Be open to refer fILD patients to PC** ($\chi^2 = 5.83$, $p=0.016$)
- Use **pulmonary rehabilitation in COPD** patients ($\chi^2 = 6.41$, $p=0.011$)



Relationship between the knowledge of guidelines/recommendations on palliative care for non-malignant lung diseases and the routine use of a breathlessness score in clinical practice. Legend: Knowledge of guidelines was evaluated by a 5-point Likert scale: 1 - I know that no such guidelines/recommendations exist; 2 - I'm not sure if such guidelines/recommendations exist or not; 3 - Yes, I know of them but have not read them; 4 - Yes, I know of them but have only looked at them briefly; 5 - Yes, I know of them and have read them carefully. Kruskal-Wallis test was implemented to assess the difference in ordinal data among all independently sampled groups, with subsequent post-hoc test (Dunn's test) for multiple comparison

Results - knowledge of guidelines and pharmacological management

The 40% of respondents that reported reading carefully or at least looked at non-cancer palliative care guidelines briefly were significantly more likely to

- Use **opioids** ($\chi^2=12.58$, $p=0.0004$) **in COPD**

Generally, there was no clear relationship between knowledge of guidelines and treatment with benzodiazepines and antidepressants.

However, for **fILD antidepressants** were used more frequently by respondents who reported they had read guidelines or looked at them briefly ($\chi^2 = 6.25$; $p = 0.044$).

Conclusions

- Breathlessness management varies between specialties and by diagnosis.
- There is a pressing need to search for effective pharmacological treatment options for this condition.
- Knowledge of guidelines is associated with evidence-based practice but many are unaware of their existence.
- There is a need for cross-specialty guidelines that are user-friendly & well-publicised that could potentially improve practice.

Strengths and limitation

Strengths

- The first multinational survey to explore the management practices of physicians in RM and PC across a range of chronic advanced lung diseases
- Particular attention paid to non-malignant diseases including ILD

Limitations

- fILD case considered a patient with idiopathic pulmonary fibrosis specifically
- Responder bias needs to be considered (distribution via society mailing list, difficult to calculate the exact response rate or consider characteristics of non-responders)
- High number of incomplete questionnaires
- Many responses from UK (practice across different healthcare systems?)
- Self-reported knowledge/attitudes to management of case vignettes may not reflect actual clinical practice

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BMC Pulmonary Medicine

RESEARCH

Open Access

Do guidelines influence breathlessness management in advanced lung diseases? A multinational survey of respiratory medicine and palliative care physicians



Małgorzata Krajnik^{1†}, Nilay Hepgul^{2†}, Andrew Wilcock³, Ewa Jassem⁴, Tomasz Bandurski⁵, Silvia Tanzi⁶, Steffen T. Simon⁷, Irene J. Higginson^{2†} and Caroline J. Jolley^{8*†} on behalf of the BETTER-B research consortium

