

Knowledge and Preference of Filipino COPD Patients on Advance Care Planning: A Cross-sectional Survey

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ABSTRACT

Objectives. To explore the current experiences and perspectives of patients with chronic obstructive pulmonary disease (COPD) with advance care planning (ACP).

Methods. A cross-sectional survey was conducted among patients diagnosed with COPD in the Philippine General Hospital. Results were illustrated using descriptive statistics.

Results. A total of 90 patients were interviewed and included in the analysis. Nearly all patients were unfamiliar with the terms ACP (95.55%), end-of-life care (99.89%), and do-not-resuscitate order (100%). The majority expressed a desire to have ACP discussions (94.44%) which were not viewed as distressing and were deemed beneficial (96.67%). Patients who were employed were more likely to express readiness to sign legal papers. Patients living with their nuclear family or living alone, and those with higher COPD assessment test (CAT) scores were more likely to relegate health care decisions to their doctors.

Conclusion. Most patients with COPD in our cohort are unfamiliar with ACP and have not received ACP discussions. Most think that it will improve healthcare and quality of life. Some demographic and clinical factors may make patients more likely to engage in ACP-related activities.

Key Words: advance care planning, chronic obstructive pulmonary disease, palliative medicine

BACKGROUND AND SIGNIFICANCE

Chronic obstructive pulmonary disease (COPD) remains one of the leading causes of mortality and disability.^{1,2} It is a progressively debilitating disease with unpredictable occurrences of exacerbations. This capricious course makes prognostication difficult, resulting in “inadequate, rushed, reactive, crisis decision-making” during the terminal stages of the illness.³

Intending to improve the end-of-life experience of patients, advanced care planning (ACP) started gaining popularity in the early 1980s. It is a continuous process of communication between patients, their families, and their health care providers, that will let patients identify, reflect, and articulate their values, goals, beliefs, and preferences to guide health-related decisions, including end-of-life care.³ These include decisions regarding hospitalizations, aggressive maneuvers, and resuscitation, ensuring that the patient can retain some form of autonomy and receives medical care that is consistent with their values, goals, and preferences.²⁻⁵ Applied initially among patients with advanced malignancy, its benefit among patients with other chronic illnesses has long been a subject of interest.



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Patients and families who had received some form of advanced planning reported less stress, anxiety, and depression,^{6,7} felt more satisfied with the quality of end-of-life care and felt better prepared for death.^{8,9} However, most of these studies were done among patients with advanced cancer. In contrast, sufficient data on ACP among COPD patients is lacking.¹⁰

Indeed, despite urgent calls for improved palliative care among patients with COPD, the needs for this aspect of care have been largely unmet.¹¹ A recent systematic review by Tavares, Jarrett, Hunt & Wilkinson demonstrated that patients with COPD were unlikely to receive appropriate palliative care.¹² This is similar to Gore, Brophy, and Greenstone's findings that patients with COPD are often subjected to more aggressive and unwanted treatment despite having the same symptoms and treatment preferences as patients with advanced cancer.¹³

Several factors have been identified as hindrances to the practice of ACP. These include a lack of understanding and diagnosis and uncertainty prognosis,^{14,15} lack of consensus of who should initiate discussions¹⁶ and fear, uneasiness and unfamiliarity towards the topic,¹⁷ and concerns of causing hopelessness and undue distress. Due to these barriers, many authors question if patients are ready to engage in ACP. Racial and cultural differences also affect preferences toward ACP and these should be considered during the process of engagement.^{18,19}

Many studies have found that despite limited knowledge and engagement in ACP among patients, most wanted to discuss their disease, prognosis, and future health-related plans.^{2,20-24} Many patients were found to express readiness and desire to engage in ACP. However, such data among patients with COPD in the Philippines are lacking. It is not known whether how Filipino patients with COPD view the concept of ACP and if they want to engage in it. This study aims to address that knowledge gap and explore patients' experiences, readiness, and perceptions with regards to the concept of advanced care planning. Data obtained may be used as a guide in improving the quality of care provided to patients with COPD.

SPECIFIC OBJECTIVES

1. To describe the experiences of COPD patients with advanced care planning
2. To determine the perspective of patients regarding engagement in ACP
3. To determine the association between demographic and clinical factors with their perceptions of advanced care

MATERIALS AND METHODS

Tool construction and validation

The questionnaire used was adapted from previous works and surveys obtained from a review of literature.^{2,20-25}

The first section included demographic characteristics and relevant medical data such as comorbidities and the number of medications. Symptom burden was also assessed through the COPD assessment test® (CAT) (Tagalog translation available online from <https://www.catestonline.org/>) and Modified Medical Research Council (mMRC) Dyspnea scale®. Details regarding past hospitalizations were also obtained. The latest FEV1 scores were obtained if available.

The second section included questions with dichotomous responses regarding previous experiences with advanced care planning, knowledge of their illness and the concept of ACP, and perceptions on ACP.

The questionnaire underwent content-validation from a panel of experts. A pilot-test was conducted among 10 patients to detect problems in survey administration and comprehensibility. Test-retest reliability was determined using Pearson's Correlation.

The questionnaire was constructed in the English language and underwent a translation and back-translation by two separate bi-lingual translators. The investigators assisted the participant in accomplishing the survey thru a structured interview.

Study design and Setting

This was a cross-sectional survey to be conducted among patients diagnosed by their physician to have Chronic Obstructive Pulmonary disease in the Philippine General Hospital out-patient department or charity wards. Information regarding patient demographics, experiences with ACP, and perceptions toward ACP was obtained. The survey was conducted within 6 months from April 2019 to September 2019.

Study Participants

Inclusion criteria

1. Diagnosed with chronic obstructive pulmonary disease.
2. Able to read and write in English or Filipino.
3. 45 years old and above.

Exclusion criteria

1. Unstable co-morbidities or medical complications precluding participation in the survey (e.g., intubated, on non-invasive ventilation).
2. Cognitive impairment preventing reliable survey participation.
3. In excessive emotional distress at the time of interview.

Recruitment

Adult patients on follow-up at the General Medicine or Pulmonology Clinic of the Philippine General Hospital or admitted at the medicine wards were recruited by convenience sampling within the designated survey period. They were recruited during office hours at the out-patient clinic and at

any time during admission at the wards. Invited participants were presented with the survey questionnaire with a cover letter discussing the study details and procedures. These were verbally explained to the participant.

Survey administration

Interviewers other than the primary investigator underwent training and received a detailed protocol for survey administration to ensure uniform procedure of administration. The primary investigator obtained consent and accessed medical records and charts during screening.

Survey Duration

The pilot study was conducted in March 2019. After survey revision, the formal study was conducted within 6 months from April to September 2019.

Sample size estimation

The sample size was computed based on an estimated COPD prevalence of 14% among adult patients >40, with a confidence level of 95%, the margin of error of 5%, and adding 10% for contingencies such as withdrawal, at least 82 respondents are required to describe the experiences and views on ACP of this population.

Data Management and Analysis

Data obtained from the surveys were transcribed onto electronic data collection-forms and were stored in a secure location during the duration of the study. Confidentiality was assured. Data collection forms did not include the participant's names and data was anonymized.

For each patient demographic and characteristic described, a chi-squared test or a paired T-test was used to determine if a particular characteristic is associated with (1) desire to engage in ACP, (2) readiness to assign a decision-maker, (3) readiness to sign legal papers on advanced care, (4) preference of comfort as a priority in treatment, (5) opinion on the effect of ACP discussions and (6) preference with regards to the giving their primary physician the role of decision-maker. These questions were deemed by the authors to be of significant relevance and impact based on the review of the literature.²³

Data were imported from MS Excel to STATA 14.1 SE (StataCorp, College Station, Texas, USA) and were thoroughly checked for completeness, accuracy, and consistency before analyses. Any missing, inaccurate, or inconsistent data were reviewed and corrected. A total of 90 observations were available for analysis. Categorical variables were summarized into frequencies and percentages. The association of selected ACP questions to demographic and clinical characteristics of the patients was determined using Pearson's chi-squared test or Fisher's exact test, as appropriate. The latter was used when more than 20% of the cells had an expected observation of less than or equal to five (≤ 5). A p-value of less than 0.05 was considered

significant for all tests. The results of the analyses were presented in tables and figures.

Ethical Considerations

The study protocol was approved by the University of the Philippines Manila Research Ethics Board (UPMREB) Panel. Consent was obtained directly from the respondents.

Respondents were informed that participation is voluntary and that they have the option to withdraw their consent at any time during the interview period. A clause for discontinuation of the interview and provision of appropriate psychosocial support should undue anxiety occur was included in the protocol; however, this was not observed among respondents.

No material compensation was provided to respondents for participating in the survey. At the same time, there were no foreseen risks associated with answering the questionnaire. Respondents who showed a desire for ACP were referred to their physician for further discussions.

The investigators had no conflict of interest in the conduct of the study.

RESULTS

Participant characteristics

A total of 90 patients were approached and interviewed, with none declining participation. All were included in the analysis. Table 1 shows the sociodemographic findings of the participants. The mean age of the participants was 67.76 + 8.21 years. Most were male (88.33%) and lived with their spouse and children (81.11%). The vast majority were Catholic (77.78%) and most claimed to be religious (83.33%). Secondary school was the highest educational attainment in less than half (45.56%) and less than a quarter are employed (21.11%). Nearly all patients were recruited from the out-patient clinics (84.44%).

Clinical characteristics are shown in Table 2. Almost half of the participants have been hospitalized in the past year for an exacerbation of COPD (48.89%), although most of them had only one admission (87.78%). Most experienced significant symptoms based on mMRC score and CAT score. The cohort was composed mostly of patients under the GOLD B (41.11%) and D (41.11%) categories. The majority of the respondents have neither been intubated, admitted to the ICU nor received cardiopulmonary resuscitation. Only a few require home oxygen therapy (15.56%). More than three-fourths do not require home can maintain their medications and have no comorbidities. More than half of the participants have been diagnosed with COPD for less than 5 years (54.44%).

Familiarity and experience with ACP

Figure 1 shows a summary of the experiences and perceptions of the participants towards ACP. Nearly all participants are not familiar with ACP (95.55%) and related

Table 1. Sociodemographic characteristics

Demographic characteristics (n=90)	n (%)
Age (years)	
<60	12 (13.33)
60-79	73 (81.11)
≥80	5 (5.56)
Sex	
Male	75 (83.33)
Female	15 (16.67)
Highest educational attainment	
Elementary	26 (28.89)
High School	41 (45.56)
College	22 (24.44)
Others	1 (1.11)
Employment status	
No	71 (78.89)
Yes	19 (21.11)
Religion	
Catholic	70 (77.78)
Christian	19 (21.11)
Muslim	1 (11.11)
Identified as religious	
No	15 (16.67)
Yes	75 (83.33)
Recruitment site	
Out-Patient	76 (84.44)
Hospital Ward	14 (15.56)
Living arrangement	
Alone	5 (5.56)
With spouse and children	73 (81.11)
With other family	12 (13.33)
Others	

terms. The terms “living will” and “power of attorney” are the concepts most familiar to the participants. Less than a quarter of participants consider COPD as curable and are not satisfied with the explanation regarding their disease. After the concept of ACP was explained to participants, only a few recalled having been offered similar discussions by their primary physician (11.11%).

Perceptions and preferences toward ACP

Nearly all (94.44%) participants wanted discussions on ACP. Although most are content with an explanation regarding COPD (87.77%), there was a significant desire for more information regarding their disease (87.79%). The prepondering belief is that that ACP discussion should be initiated at the out-patient setting (92.22%). More patients desired a more aggressive approach (72%) rather than treatment focused on comfort (43%). Most patients felt anxious in particular about the financial situation of their family (66.67%), while only about a third felt anxious about discussions about the future (31.11%) and the process of dying (32.22%). A significant proportion can pick a surrogate health care decision-maker (84.44%) and feels ready to sign formal papers (64.44%) regarding decisions on their healthcare. Most patients needed to consult their

Table 2. Clinical characteristics

Clinical characteristics	n (%)
Hospitalized for the past year for COPD exacerbation	
No	46 (51.11)
Yes	44 (48.89)
Number of admissions past year	
0-1	79 (87.78)
≥2	11 (12.22)
mMRC score	
0-1	15 (16.67)
2-4	75 (83.33)
CAT score	
<10	33 (36.67)
≥10	57 (63.33)
COPD severity	
1	2 (2.22)
2	42 (46.67)
3	33 (36.67)
4	13 (14.44)
COPD GOLD group	
A	10 (11.11)
B	37 (41.11)
C	6 (6.67)
D	37 (41.11)
Had received CPR before	
No	86 (95.56)
Yes	4 (4.44)
Had been previously admitted to an ICU	
No	76 (84.44)
Yes	14 (15.56)
Had been intubated or received NIPPV	
No	80 (88.89)
Yes	10 (11.11)
Needs oxygen at home	
No	76 (84.44)
Yes	14 (15.56)
Number of medications	
None	1 (1.11)
1	37 (41.11)
2	29 (32.22)
>3	23 (25.56)
On triple therapy (LAMA+ICS+LABA)	
Able to maintain medications	13 (14.44)
No	19 (21.11)
Yes	71 (78.89)
Number of comorbidities	
0	45 (50.00)
1-2	35 (38.89)
>2	10 (11.11)
Time since diagnosis	
<5 years	49 (54.44)
≥5 years	41 (45.56)

family regarding their decisions (70%) and wanted to defer decision making to their physicians(66.67%). Almost all viewed ACP discussions as beneficial in improving quality of life (96.67) and expected the initiation of discussions to come from their doctor (82.22%).

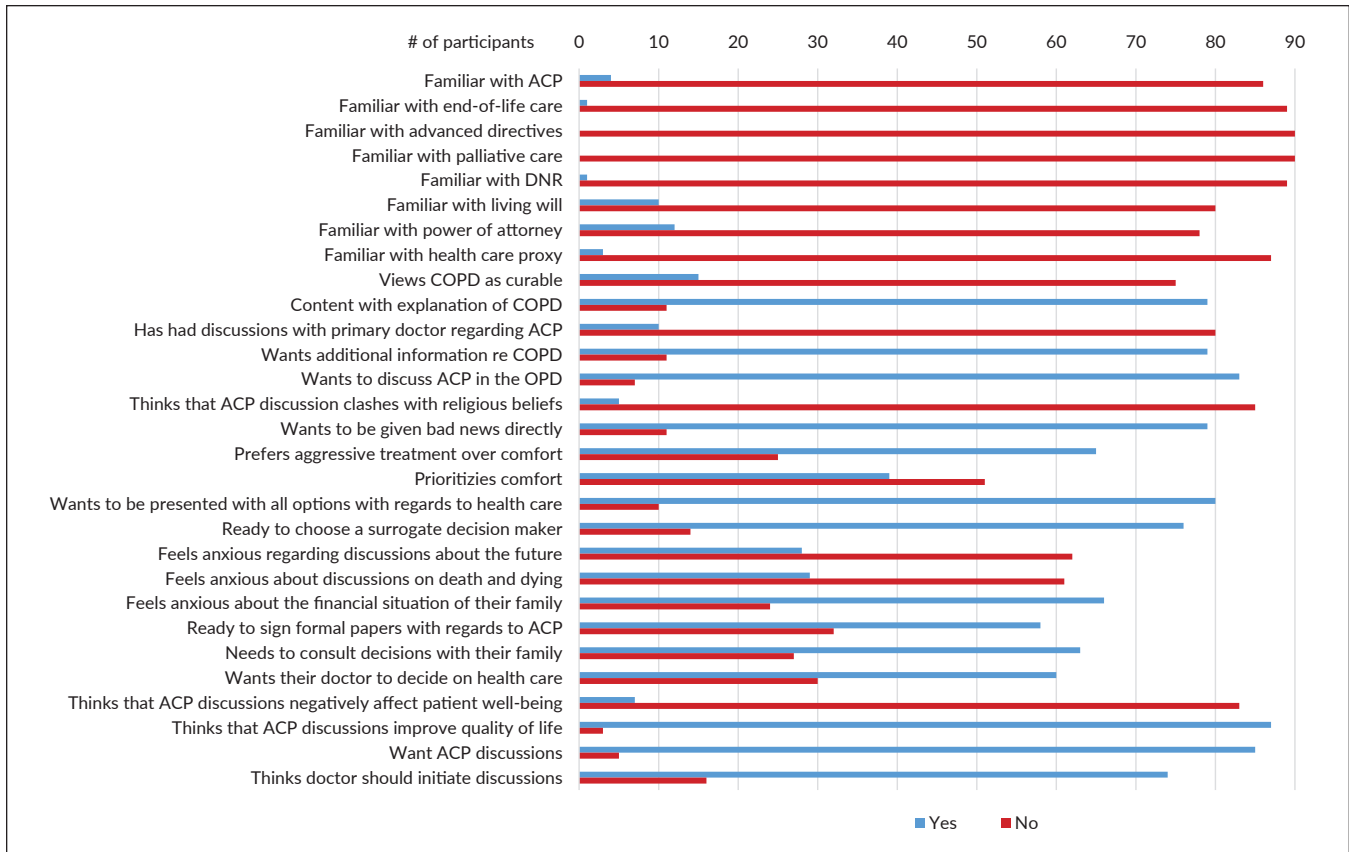


Figure 1. Experiences with and perceptions toward ACP among patients with COPD.

Predictors of desire and readiness for ACP

Correlations between demographic and clinical parameters and selected key questions are shown in Tables 3 and 4. Readiness to sign formal papers was significantly associated with being employed (p=0.043), Those who lived alone or with their spouse and children were more likely to relegate decision making to their doctors (p=0.030). A similar pattern was found among patients with more severe symptoms based on CAT scores. Patients with a CAT score >10 were more likely to prefer their doctors to make health care decisions for them (p=0.020). Meanwhile, those with no comorbidities were ready to assign a medical decision-maker than those with comorbidities (p=0.022). Having >2 comorbidities was associated with the preference of comfort-focused care (p=0.037) although patients with no comorbidities were more likely than those with 1-2 comorbidities to share this perspective. No other positive associations were found among other demographic and clinical characteristics and their responses to the selected key questions.

DISCUSSION

This is the first study in the Philippines that has aimed to explore the knowledge, experience, and perspectives

on ACP among patients with COPD. There have been previous studies done exploring perspectives on palliative care among patients with terminal illness²⁶ and health care practitioners,²⁷ but an examination of ACP among patients with COPD is lacking.

Our findings support the result of a systematic review¹⁷ that most patients with COPD desire to have ACP discussions and associated these with improved care and quality of life. A significant proportion of our cohort was ready to engage in concrete steps such as assigning a formal healthcare decision-maker and signing legal papers, signifying readiness to engage in ACP. Unfortunately, this is in stark contrast to the low level of knowledge and low occurrence of discussions between physicians and patients, a problem that has been observed in previous studies.^{17,22,26} A very low rate of 12% in our population was similar to rates reported, which was usually less than 30%. Only 4 patients were familiar with ACP and only up to 15 were familiar with other ACP-related terms. The majority of these patients wanted to engage in ACP and thus, barriers to discussions – such as low physician engagement, lack of familiarity, and time constraints- are worth investigating. Clearly, our findings show that there is an urgent need to bridge the gap between patient needs and current practices on education and discussions with regards to ACP.

Table 3. Descriptive Information of participants and association with ACP

Demographic characteristics	n (%)	Wants to engage in ACP discussions n (%)	p-value	Feels ready to assign a medical decision-maker n (%)	p-value	Ready to sign legal papers on ACP n (%)	p-value	Prefers treatment focused on comfort n (%)	p-value	Deems of end-of-life care discussions can improve care n (%)	p-value	Prefers doctor to make decisions n (%)	p-value
Age													
<60	12 (13.33)	12 (100.00)	1.000	9 (75.00)	0.468	9 (75.00)	0.110	6 (50.00)	0.706	12 (100.00)	1.000	10 (83.33)	0.545
60-79	73 (81.11)	5 (6.85)		63 (86.30)		48 (65.75)		30 (41.10)		70 (95.89)		47 (64.38)	
≥80	5 (5.56)	5 (100.00)		5 (100.00)		1 (20.00)		3 (60.00)		5 (100.00)		3 (60.00)	
Sex													
Male	75 (83.33)	72 (96.00)	0.192	63 (84.00)	0.687	48 (64.00)	0.844	32 (42.67)	0.775	73 (97.33)	0.425	53 (70.67)	0.072
Female	15 (16.67)	13 (86.66)		14 (93.33)		10 (66.67)		7 (46.67)		14 (93.33)		7 (46.67)	
Highest educational attainment													
Elementary	26 (28.89)	25 (96.15)	1.000	23 (88.46)	0.882	15 (57.69)	0.818	13 (50.00)	0.193	25 (96.15)	0.800	16 (61.54)	0.378
High School	41 (45.56)	38 (92.68)		35 (85.37)		27 (65.85)		19 (46.34)		39 (95.12)		30 (73.17)	
College	22 (24.44)	21 (95.45)		18 (81.82)		15 (68.18)		6 (27.27)		22 (100.00)		14 (63.64)	
Others	1 (1.11)	1 (100.00)		1 (100.00)		1 (100.00)		1 (100.00)		1 (100.00)		0 (0.00)	
Employment status													
No	71 (78.89)	67 (94.37)	1.000	60 (84.51)	0.728	42 (59.15)	0.043	27 (38.03)	0.050	68 (95.77)	1.000	48 (67.61)	0.715
Yes	19 (21.11)	18 (94.74)		17 (89.47)		16 (84.21)		12 (63.16)		19 (100.00)		12 (63.16)	
Time since diagnosis													
<5 years	49 (54.44)	46 (93.88)	1.000	42 (85.71)	0.963	33 (67.35)	0.529	22 (44.90)	0.743	47 (95.92)	1.000	29 (59.18)	0.100
≥5 years	41 (45.56)	39 (95.12)		35 (85.37)		25 (60.98)		17 (41.46)		40 (97.56)		31 (75.61)	
Identified as religious													
No	15 (16.67)	14 (93.33)	1.000	11 (73.33)	0.219	9 (60.00)	0.694	7 (46.67)	0.775	15 (100.00)	1.000	9 (60.00)	0.549
Yes	75 (83.33)	71 (94.67)		66 (88.00)		49 (65.33)		32 (42.67)		72 (96.00)		51 (68.00)	
Recruitment site													
Out-Patient	76 (84.44)	73 (96.05)	0.171	65 (85.53)	1.000	48 (63.16)	0.552	32 (42.11)	0.584	73 (96.05)	1.000	51 (67.11)	1.000
Hospital Ward	14 (15.56)	12 (85.71)		12 (85.71)		10 (71.43)		7 (50.00)		14 (100.00)		9 (64.29)	
Living arrangement													
Alone	5 (5.56)	5 (100.00)	0.658	4 (80.00)	0.723	2 (40.00)	0.563	3 (60.00)	0.772	5 (100.00)	1.000	4 (80.00)	0.030
With spouse and children	73 (81.11)	69 (95.42)		62 (84.93)		48 (65.75)		31 (42.47)		70 (95.89)		52 (71.23)	
With other family	12 (13.33)	11 (91.67)		11 (91.67)		8 (66.67)		5 (41.67)		12 (100.00)		4 (33.33)	
Others	-	-		-		-		-		-		-	

The paternalistic and family-oriented nature of Filipino culture is evident in the common desire to defer health care decisions to their doctors and the need to consult with their family with regards to matters on health. Curiously, patients who were living alone or with their nuclear family were more likely than those living with extended members of the family to desire their doctor to make health care decisions. This might reflect complex family interrelationships²⁸ when the patient becomes dependent on extended family members. In these instances, decisions are not done by an individual, but by a collaborative discussion of the family.²⁶ Undoubtedly, ACP discussions with Filipino patients should start by identifying key family decision-makers and ensure their involvement.

Consistent with descriptions of Filipino values, most of our cohort described themselves as religious. However, this did not appear to be a factor in decision making, as reflected in participant responses and analysis of associations. Neither was the fatalistic attitude common among Filipinos²⁹ found in our cohort as most wanted to be given bad news directly, wanted more information on their disease, and wanted all options to be laid out. This signified that our cohort wanted to have more control over their future. Discussions about the future and the process of death and dying were also

not found to be distressing to our participants, in contrast to previous concerns that these interfere with engagement in hospice care.³⁰

There were only a few associations found between different demographic and clinical characteristics and ACP. In general, this was probably due to the over-all shared positive attitude towards ACP among the study population. Patients who were employed were more likely to be ready to sign legal papers on healthcare. A similar trend was found in a survey among patients with cancer in which patients who were employed wanted a more active role in health care-decision making³¹ and thus be more ready to engage in formal steps in the ACP process. An alternative explanation is that these patients are either more educated or are more self-sufficient than those who are unemployed.

Contrary to expectations, symptom burden and disease severity was not correlated with increased engagement or desire for ACP. Although patients with more than 2 comorbidities were more likely to desire comfort-focused care, patients with no comorbidities were more likely to choose this option than those with 1-2 comorbidities, preventing inference of a trend. This lack of association may be due to the composition of our cohort who are mostly ambulatory, with only mild to moderate symptoms, and have

neither had recurrent hospitalizations, received intubation or advanced ventilation, nor cardio-pulmonary resuscitation. The majority also do not require home oxygen therapy and were recruited at the outpatient setting. This is in contrast to the systematic review by Tavares,¹⁷ in which most patients were in the late stage of the COPD disease spectrum. The inclusion of patients at more advanced stages of COPD might reveal stronger associations with different aspects of ACP. It should be stressed, however, that even patients with very mild symptoms have positive attitudes toward ACP and think that ACP should be started at the outpatient setting, suggesting that clinicians need not wait for clinical deterioration before engaging in ACP discussions.

Study Limitations

Our findings are limited by the sample size and the study setting, which prevents generalizability of results and a stronger analysis for associations or predictors for the desire to engage in ACP. In addition, our cohort is composed mostly of patients with mild to moderate symptoms, and the majority can follow-up at the out-patient clinics. The views of these patients may not reflect those with more severe disease, especially those who are too debilitated to comply with follow-up visits.

CONCLUSION

This study provides insight into the knowledge, experiences, and preferences of patients with COPD in a tertiary hospital in the Philippines. Most patients are not receiving ACP despite wanting to engage in ACP and thinking that it will improve healthcare and quality of life. Low patient familiarity and low physician engagement need to be addressed to improve ACP engagement.

Statement of Authorship

All authors participated in data collection, analysis, writing and review of manuscript, and approved the final version submitted.

Author Disclosure

All authors declared no conflicts of interest.

Funding Source

The study was self-funded by the authors.

Table 4. Clinical data of patients included in the study and association with ACP

Clinical characteristics	Freq (Column %)	Wants to engage in ACP discussions n (%)	p-value	Feels ready to assign a medical decision-maker Freq (Row %)	p-value	Ready to sign legal papers on ACP Freq (Row %)	p-value	Prefers treatment focused on comfort Freq (Row %)	p-value	Deems of end-of-life care discussions can improve care Freq (Row %)	p-value	Prefers doctor to make decisions Freq (Row %)	p-value
Hospitalized for the past year for COPD exacerbation													
No	46 (51.11)	44 (95.65)	0.673	41 (89.13)	0.324	28 (60.87)	0.469	17 (36.96)	0.212	46 (100.00)	0.113	32 (69.57)	0.551
Yes	44 (48.89)	41 (93.18)		36 (81.82)		30 (68.18)		22 (50.00)		41 (93.18)		28 (63.64)	
Number of admissions past year													
0-1	79 (87.78)	76 (96.20)	0.111	68 (86.08)	0.657	52 (65.82)	0.512	35 (44.30)	0.751	77 (97.47)	0.327	52 (65.82)	0.746
≥2	11 (12.22)	9 (81.82)		9 (81.82)		6 (54.55)		4 (36.36)		10 (90.91)		8 (72.73)	
mMRC score													
0-1	15 (16.67)	15 (100.00)	0.585	15 (100.00)	0.115	9 (60.00)	0.694	6 (40.00)	0.775	14 (93.33)	0.425	9 (60.00)	0.549
2-4	75 (83.33)	70 (93.33)		62 (82.67)		49 (65.33)		33 (44.00)		73 (97.33)		51 (68.00)	
CAT score													
<10	33 (36.67)	31 (93.94)	1.000	29 (87.88)	0.761	21 (63.64)	0.903	13 (39.39)	0.566	31 (93.94)	0.552	17 (51.52)	0.020
≥10	57 (63.33)	54 (94.73)		48 (84.21)		37 (64.91)		26 (45.61)		56 (98.25)		43 (75.44)	
COPD severity													
1	2 (2.22)	2 (100.00)	0.425	2 (100.00)	0.672	2 (100.00)	0.405	2 (100.00)	0.349	2 (100.00)	0.318	2 (100.00)	0.176
2	42 (46.67)	41 (97.62)		37 (88.10)		27 (64.29)		16 (38.10)		40 (95.24)			
3	33 (36.67)	30 (90.91)		28 (84.85)		23 (69.70)		16 (48.48)		33 (100.00)		26 (78.79)	
4	13 (14.44)	12 (92.31)		10 (76.92)		6 (46.15)		5 (38.46)		12 (92.31)		8 (61.54)	
COPD GOLD group													
A	10 (11.11)	10 (100.00)	1.000	10 (100.00)	0.577	6 (60.00)	0.859	5 (50.00)	0.825	9 (90.00)	0.262	4 (40.00)	0.229
B	37 (41.11)	35 (94.59)		32 (86.49)		24 (64.86)		14 (37.84)		37 (100.00)		27 (72.97)	
C	6 (6.67)	6 (100.00)		5 (83.33)		5 (83.33)		3 (50.00)		6 (100.00)		5 (83.33)	
D	37 (41.11)	34 (91.89)		30 (81.08)		23 (62.16)		17 (45.95)		35 (94.59)		24 (64.86)	
Had received CPR before													
No	86 (95.56)	81 (94.19)	1.000	73 (84.88)	1.000	55 (63.95)	1.000	37 (43.02)	1.000	83 (96.51)	1.000	56 (65.12)	0.297
Yes	4 (4.44)	4 (100.00)		4 (100.00)		3 (75.00)		2 (50.00)		4 (100.00)		4 (100.00)	
Had been previously admitted to an ICU													
No	76 (84.44)	71 (93.42)	1.000	65 (85.53)	1.000	48 (63.16)	0.552	33 (43.42)	1.000	74 (97.37)	0.402	50 (65.79)	0.767
Yes	14 (15.56)	0 (0.00)		12 (85.71)		10 (71.43)		6 (42.86)		13 (92.86)		10 (71.43)	
Had been intubated or received NIPPV													
No	80 (88.89)	75 (93.75)	1.000	68 (85.00)	1.000	52 (65.00)	0.739	36 (45.00)	0.505	77 (96.25)	1.000	51 (63.75)	0.155
Yes	10 (11.11)	10 (100.00)		9 (90.00)		6 (60.00)		3 (30.00)		10 (100.00)		9 (90.00)	
Needs oxygen at home													
No	76 (84.44)	73 (96.05)	0.171	65 (85.53)	1.000	49 (64.47)	0.989	34 (44.74)	0.531	74 (97.37)	0.402	50 (65.79)	0.767
Yes	14 (15.56)	12 (85.71)		12 (85.71)		9 (64.29)		5 (35.71)		13 (92.86)		10 (71.43)	
Number of medications													
None	1 (1.11)	1 (100.00)	0.471	1 (100.00)	0.620	0 (0.00)	0.735	0 (0.00)	0.240	1 (100.00)	1.000	0 (0.00)	0.080
1	37 (41.11)	36 (97.30)		33 (89.19)		24 (64.86)		16 (43.24)		36 (97.30)		21 (56.76)	
2	29 (32.22)	26 (89.66)		23 (79.31)		19 (65.52)		16 (55.17)		28 (96.55)		20 (68.97)	
>3	23 (25.56)	22 (95.65)		20 (86.96)		15 (65.22)		7 (30.43)		22 (95.65)		19 (82.61)	
Able to maintain medications													
No	19 (21.11)	18 (94.74)	1.000	15 (78.95)	0.461	15 (78.95)	0.137	8 (42.11)	0.903	18 (94.74)	0.513	14 (73.68)	0.465
Yes	71 (78.89)	67 (94.37)		62 (87.32)		43 (60.56)		31 (43.66)		69 (97.18)		46 (64.79)	
Number of comorbidities													
0	45 (50.00)	44 (97.78)	0.228	43 (95.56)	0.022	26 (57.78)	0.335	22 (48.89)	0.037	44 (97.78)	0.477	1 (2.22)	0.879
1-2	35 (38.89)	31 (88.57)		27 (77.14)		24 (68.57)		10 (28.57)		34 (97.14)		4 (11.43)	
>2	10 (11.11)	10 (100.00)		7 (70.00)		8 (80.00)		7 (70.00)		9 (90.00)		0 (0.00)	

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