

Comparability of the Symptom Assessment Scale and Edmonton Symptom Assessment System within a National Palliative Care Clinical Registry

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Abstract

Context:

Clinical quality registries increasingly rely on patient-reported outcome measures (PROMs) to monitor care quality and inform clinical practice. As registries evolve, introducing new instruments requires evidence that longitudinal outcome reporting and data interpretation remain comparable. Within the Australian Palliative Care Outcomes Registry (APCOR), some participating facilities use the Symptom Assessment Scale (SAS), while others use the Edmonton Symptom Assessment System (ESAS), providing an opportunity to evaluate the comparability of these measures within a national clinical quality registry.

Objectives

To evaluate population-level comparability between ESAS and SAS scores.

Methods

A retrospective matched cohort study using PCOC data (July to December 2024). ESAS and SAS scores were matched 1:1 using nearest-neighbour exact matching without replacement. Baseline symptom scores and prevalences were compared using the Mann–Whitney U test and χ^2 test, respectively. Longitudinal symptom comparability was examined using mixed-effects logistic regression adjusted for demographic and clinical covariates.

Results

The matched cohort included 14,498 participants (7,249 per group), with a mean age of 77.4 years, and 50.8% were female. Baseline symptom scores were comparable between the two tools for most symptoms, with small differences in bowel problems and fatigue. Similarly, longitudinal symptom changes were similar for pain, breathlessness, bowel problems, and insomnia (interaction $p = 0.18, 0.09, 0.08$, and 0.67 , respectively), whereas modest differences were observed for fatigue, nausea, and appetite problems (interaction $p < 0.001$, $P = 0.016$, and $P < 0.001$, respectively).

Conclusion

ESAS and SAS demonstrated comparable performance across most symptom domains, supporting implementation of a common PROM within Australia's national palliative care clinical quality registry. These findings provide evidence that registry transition to ESAS can be achieved while preserving

longitudinal analyses, data quality and interpretation of patient-reported outcomes, facilitating national consistency and greater international comparability.

Background

Palliative care is a multidisciplinary specialty focussed on preventing and relieving suffering while supporting optimal quality of life for patients and their families [1]. Central to this is the holistic assessment of people's needs that in turn inform individualised, patient-centred care planning [1, 2]. In Australia, assessment of palliative care needs has been standardised by the Palliative Care Outcomes Collaboration (PCOC), a clinical quality registry. PCOC improves individual patient care and also supports benchmarking for palliative services across the country [3]. Included in these measures are patient-reported outcome measures (PROMs), which includes the Symptom Assessment Scale (SAS).

The SAS is used to capture patient-reported distress associated with common physical symptoms in palliative care. It measures how much distress a person is experiencing from seven common symptoms [4]. Patients rate their distress using a scale from 0–10, where 0 means no distress and 10 means severe distress. Included in this assessment are appetite problems, bowel problems, breathing problems, fatigue, insomnia, nausea, and pain [4]. Symptom distress scores are patient-reported but can be proxy-rated by a caregiver or clinician if the patient is unable to complete the assessment. SAS has demonstrated reliability, sensitivity to change, and is feasible for routine clinical use [4]. However, while SAS captures physical symptoms it may under-represent the impact of other important patient-centred domains such as emotional distress. Further, the notion of 'distress' may not be understood consistently across cultures and literacy levels, which may affect comparability [5]. Finally, the use of SAS is largely limited to Australia [6].

The Edmonton Symptom Assessment System (ESAS) is another PROM that is widely used in palliative care to measure the severity of common symptoms and has a substantial evidence base [7–9]. The ESAS assesses nine core symptoms: pain, tiredness, nausea, depression, anxiety, drowsiness, shortness of breath, appetite, sleep and overall wellbeing [10]. It also includes an optional 'other problem' field which allows the recording of patient-specific symptoms [11]. Like the SAS, ESAS uses a 0–10 scale, where 0 = no symptom and 10 = worst possible severity [10]. The ESAS is one of the most widely adopted and validated multidimensional, palliative care, symptom assessment tools [10]. It has strong psychometric properties, broad symptom coverage, and long-standing use in clinical practice and research make it a promising instrument for cross-country comparisons [10].

Within Australia, a small number of services participating in PCOC have elected to substitute ESAS for SAS. Many of these services were already using ESAS prior to participating in PCOC and chose to continue with its use rather than transition to SAS. In some cases, electronic medical record systems have ESAS embedded, supporting ease of data capture. To comply with national reporting requirements, ESAS scores have been mapped to SAS domains to allow benchmarking. This practice has assumed

measurement alignment between instruments. However, the extent to which SAS and ESAS generate comparable symptom scores has not been systematically examined.

Establishing whether adoption of ESAS maintains continuity of national benchmarking while supporting alignment with international outcome frameworks has implications not only for longitudinal data integrity but also for cross-sector integration and future benchmarking initiatives. We therefore undertook a comparative evaluation of these tools to determine whether data from SAS and ESAS can reliably be used interchangeably and longitudinally within the registry.

Aim

This study aimed to evaluate the concurrence between symptom scores collected via SAS and ESAS. Further, this work sought to determine whether adoption of ESAS would maintain continuity of national benchmarking and longitudinal reporting within PCOC, and support alignment with internationally established palliative care outcome measures.

Methods

Study design and data source

This retrospective matched cohort study used a subset of PCOC longitudinal data held by the Australian Palliative Care Outcomes Registry (APCOR), submitted between 1 July to 31 December 2024 [12]. The data included variables measured once, such as patient demographics (age, sex, country of birth, and preferred language) and primary diagnosis. Repeatedly measured variables included care setting, physical symptoms, functional status palliative care phase [13]. PCOC assessments are collected at the start and end of each palliative care phase (stable, unstable, deteriorating, and terminal). In this study, the mapped ESAS items were treated as distinct from the SAS items to allow for a direct comparative analysis of their performance across different clinical phases.

Cohort establishment and exposure status

This cohort was established using symptom measurements scores from the SAS and ESAS tools. Adult patients (aged ≥ 18 years) whose symptom were assessed using the ESAS tool and who received care from palliative care services implementing ESAS were considered the exposed group. Since the two tools were not administered to the same individuals, matching was done as described below, and comparability was assessed at the population level rather than agreement between individual patients.

Matching procedure

The first assessments recoded at the commencement of palliative care for each patient were used as the baseline measure. A total of 7,512 patients assessed using ESAS (32,643 assessments) and 65,510 patients assessed using SAS (190,727 assessments) were initially extracted from the APCOR. Since most (98%) of the ESAS measurements came from community-based palliative care services, the analysis was restricted to patients receiving community-based palliative care to enhance comparability between two cohorts. Patients with missing baseline palliative care phase, primary diagnosis, or AKPS data were excluded before matching, as these variables were used in the matching process. After exclusion of these patients, 7,400 from the ESAS cohort and 24,181 from the SAS cohort patients were used for matching.

Since measurements obtained using the two tools were derived from different patients, a 1:1 nearest-neighbour exact matching method without replacement was employed to minimise confounding. Matching was based using three key clinical variables likely to influence symptom scores; baseline palliative care phase, baseline AKPS (grouped into 10-point categories), and broad primary diagnosis category (malignant vs non-malignant). Covariate balance after matching was assessed using the standardised mean differences (SMD) across all baseline variables. The matching procedure finally yielded a matched cohort of 14,498 patients (7,249 in each group). Repeated measurements from matched patients were retrieved for longitudinal analysis (Fig. 1).

Ethical approval

for this study was obtained from the xx Ethics Committee (reference number xx). A waiver of consent was granted for the use of de-identified information.

Figure 1. Flow diagram of patient selection and matching for the SAS and ESAS cohorts.

Measurements and tools

The **SAS** has demonstrated good reliability and validity in Australia [4, 14, 15] and covers seven physical symptoms: pain, appetite problems, breathlessness, nausea, fatigue, insomnia, and bowel problems. The **ESAS** is also well-validated in Australia [16], covers nine domains, including pain, tiredness, drowsiness, nausea, lack of appetite, shortness of breath, depression, anxiety, and well-being. Both tools use an 11-point numeric rating scale ranging from 0 (no problem) to 10 (the worst possible symptom). For this comparison, we restricted the analysis to the seven SAS symptoms and their conceptually comparable counterparts on the ESAS (pain, appetite problems, breathlessness, nausea, fatigue, insomnia, and bowel problems); the remaining three ESAS symptoms (depression, anxiety, and well-being) were excluded from the analysis.

Outcomes of interests

The primary outcome of this study was the comparability of symptom assessments measured using the SAS and ESAS tools. To evaluate this, both baseline and longitudinal repeated measurements collected

using the two assessment tools were analysed.

Statistical analysis

Descriptive summaries of demographic and clinical characteristics were reported as frequencies and percentages for categorical variables and as means with standard deviations (SD) for continuous variables. Additionally, covariate balance for the matching variables was assessed using standardised mean differences (SMD).

Baseline symptom scores assessed using the two tools were compared using Mann–Whitney U tests because the data were not normally distributed. Median scores, U-statistics, and *p*-values were reported for each symptom. Clinical importance was assessed using effect sizes calculated from the rank-biserial correlation and interpreted as calculated interpreted as small ($r < 0.3$), medium ($0.3 \leq r < 0.5$) and large ($r \geq 0.5$) [17].

In addition, baseline symptom prevalences measured using the two assessment tools were presented in bar charts and compared using Chi-square (χ^2) tests.

The longitudinal responsiveness (stability) of the two assessment tools was visualised graphically and compared using mixed-effects logistic regression models. Each model was adjusted for age, sex, primary diagnosis, functional status, and palliative care phase. Statistical significance was declared at *p*-value < 0.05 . All analyses were conducted using R (version 4.5.1).

Reporting

Results were reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines [18]. Available as a supplementary file (**Supplementary File 1**).

Results

Participants demographic and clinical characteristics

A total of 14,498 patients were included in the matched cohort, comprising 7,249 assessed using ESAS and 7,249 assessed using SAS. Overall, the two groups were well balanced across all sociodemographic and clinical characteristics, with all SMD < 0.25 and exact matching achieved for primary diagnosis, AKPS, and palliative care phase. The mean age was 77.4 years (SD 13.3), with patients in the SAS cohort being slightly older than the ESAS cohort (78.4 vs 76.5 years). Approximately half of the patients were female (50.8%), a similar distribution between cohorts. Most patients reported English as their preferred language (88.3%), and 61.2% were born in Australia. Malignant diagnoses accounted for 63.8% of patients for in both groups. The mean baseline AKPS was 48.7 (SD: 17.7), with 35.0% of patients having an AKPS score ≤ 40 . About half of the patients were classified as being in the deteriorating phase (51.6%) (Table 1).

Table 1
Baseline demographic and clinical characteristics of the matched cohort.

Characteristic	Overall n = 14,498 ¹	SAS cohort n = 7,249 ¹	ESAS cohort n = 7,249 ¹	SMD ²
Age, years	77.4 (13.3)	78.4 (13.2)	76.5 (13.5)	0.15
Age group				0.15
<65 years	2,341 (16.1)	1,021 (14.1)	1,320 (18.2)	
65–74 years	2,834 (19.5)	1,353 (18.7)	1,481 (20.4)	
75–84 years	4,330 (29.9)	2,170 (29.9)	2,160 (29.8)	
≥85 years	4,993 (34.4)	2,705 (37.3)	2,288 (31.6)	
Sex				0.06
Female	7,372 (50.8)	3,761 (51.9)	3,611 (49.8)	
Male	7,115 (49.1)	3,478 (48.0)	3,637 (50.2)	
Indeterminate or missing	11 (0.1)	10 (0.1)	1 (0.0)	
Preferred language				0.25
English	12,804 (88.3)	6,671 (92.0)	6,133 (84.6)	
Non-English	1,502 (10.4)	552 (7.6)	950 (13.1)	
Unknown	192 (1.3)	26 (0.4)	166 (2.3)	
Country of birth				0.10
Australia	8,877 (61.2)	4,604 (63.5)	4,273 (58.9)	
Overseas	4,972 (34.3)	2,359 (32.5)	2,613 (36.0)	
Missing	649 (4.5)	286 (3.9)	363 (5.0)	
Primary diagnosis				0.00
Malignant	9,244 (63.8)	4,622 (63.8)	4,622 (63.8)	
Non-malignant	5,254 (36.2)	2,627 (36.2)	2,627 (36.2)	
AKPS score	48.7 (17.7)	48.7 (17.7)	48.7 (17.7)	0.00
AKPS category				0.00
>40	9,418 (65.0)	4,709 (65.0)	4,709 (65.0)	
≤40	5,080 (35.0)	2,540 (35.0)	2,540 (35.0)	
Palliative care phase				0.00

Characteristic	Overall n = 14,498 ¹	SAS cohort n = 7,249 ¹	ESAS cohort n = 7,249 ¹	SMD ²
Deteriorating	7,488 (51.6)	3,744 (51.6)	3,744 (51.6)	
Stable	5,734 (39.6)	2,867 (39.6)	2,867 (39.6)	
Terminal	910 (6.3)	455 (6.3)	455 (6.3)	
Unstable	366 (2.5)	183 (2.5)	183 (2.5)	
¹ Mean (SD); n (%)				
² SMD = standardised mean difference.				
Note. Values are presented as mean (SD) for continuous variables and n (proportion) for categorical variables				

Comparison of baseline symptom scores measured using the ESAS and SAS

At the commencement of palliative care, the SAS and ESAS symptom scores were broadly comparable across symptoms (Fig. 2). Similarly, baseline symptom prevalences were comparable, with negligible differences observed for pain, appetite problems, breathlessness, nausea, and fatigue, whereas small differences were observed in bowel problems and insomnia. Although statistically significant differences were observed for most symptoms, mostly due to larger sample size, the effect sizes were negligible for pain, breathlessness, nausea, appetite problems, and insomnia, and small for bowel problems and fatigue. This suggests that symptoms measured using both tools were clinically comparable and consistent (Table 2 and Fig. 2).

Table 2

Baseline symptom score comparison between matched ESAS and SAS cohorts using the Mann–Whitney U test.

Symptom	ESAS Median (IQR)	SAS Median (IQR)	U statistic	P value	Effect size (r)	Interpretation
Pain	1.0 (0.0–2.0)	1.0 (0.0–3.0)	17,729,275	0.001	0.028	Negligible
Nausea	0.0 (0.0–0.0)	0.0 (0.0–0.0)	17,981,880	0.933	0.001	Negligible
Breathing	0.0 (0.0–1.0)	0.0 (0.0–2.0)	17,449,778	0.005	0.023	Negligible
Appetite	0.0 (0.0–2.0)	0.0 (0.0–2.0)	17,410,384	0.004	0.024	Negligible
Bowels	0.0 (0.0–1.0)	0.0 (0.0–2.0)	15,078,393	< 0.001	0.132	Small
Fatigue	1.0 (0.0–3.0)	2.0 (0.0–3.0)	15,853,593	< 0.001	0.102	Small
Insomnia	0.0 (0.0–1.0)	0.0 (0.0–1.0)	15,900,985	< 0.001	0.073	Negligible

Abbreviations: ESAS, Edmonton Symptom Assessment System; SAS, Symptom Assessment Scale; IQR, interquartile range.

Note: Values are presented as median (IQR). Group differences were assessed using the Mann–Whitney U test. Effect size (r) was calculated as Z divided by the square root of total observations.

Interpretation of effect size (r): <0.10 negligible; 0.10–0.29 small; 0.30–0.49 moderate; ≥0.50 large.

Figure 2. Comparing of baseline symptom prevalence using the ESAS and SAS

Longitudinal symptom repores

We compared longitudinal changes in symptom prevalence across patient assessments recorded within two weeks (14 days) using unadjusted graphical analysis (Figs. 3 and 4) and adjusted mixed-effects logistic regression. After adjusting for age, sex, AKPS, palliative care phase, and primary diagnosis, the two assessment tools demonstrated broadly comparable baseline symptom prevalence and longitudinal symptom trajectories. Accordingly, longitudinal symptom changes were similar for pain, breathlessness, bowel problems, and insomnia (interaction $p = 0.18, 0.09, 0.08$, and 0.67 , respectively), whereas modest differences were observed for fatigue, nausea, and appetite problems (interaction $p < 0.001, P = 0.016$, and $P < 0.001$, respectively) (Table 3).

Table 3
Mixed-effects logistic regression of symptom presence during the first 14 days
from first palliative care start.

Symptom	Term	aOR (95% CI)	P value
Pain	ESAS vs SAS at baseline	1.04 (0.94–1.14)	0.45140
Pain	Daily change in SAS	1.00 (0.98–1.01)	0.81239
Pain	ESAS × time interaction	1.01 (0.99–1.04)	0.17531
Breathlessness	ESAS vs SAS at baseline	1.00 (0.91–1.10)	0.99406
Breathlessness	Daily change in SAS	0.99 (0.98–1.01)	0.28171
Breathlessness	ESAS × time interaction	1.02 (1.00–1.04)	0.09338
Fatigue	ESAS vs SAS at baseline	0.94 (0.56–1.57)	0.80526
Fatigue	Daily change in SAS	0.95 (0.92–0.98)	0.00201
Fatigue	ESAS × time interaction	1.09 (1.04–1.14)	< 0.001
Nausea	ESAS vs SAS at baseline	0.98 (0.29–3.29)	0.97285
Nausea	Daily change in SAS	0.92 (0.89–0.95)	< 0.001
Nausea	ESAS × time interaction	1.06 (1.01–1.11)	0.01642
Appetite problems	ESAS vs SAS at baseline	1.08 (0.98–1.18)	0.11830
Appetite problems	Daily change in SAS	0.98 (0.96–0.99)	0.00191
Appetite problems	ESAS × time interaction	1.04 (1.02–1.06)	< 0.001
Bowel problems	ESAS vs SAS at baseline	0.43 (0.40–0.48)	< 0.001
Bowel problems	Daily change in SAS	0.98 (0.96–0.99)	< 0.001
Bowel problems	ESAS × time interaction	1.02 (1.00–1.04)	0.07810
Insomnia	ESAS vs SAS at baseline	0.57 (0.50–0.64)	< 0.001
Insomnia	Daily change in SAS	1.00 (0.99–1.02)	0.69294
Insomnia	ESAS × time interaction	1.01 (0.98–1.03)	0.67425

Figure 3. Longitudinal changes in symptom prevalence across assessments recorded within the first two weeks (14 days) for pain, breathlessness, fatigue and nausea

Figure 4. Longitudinal changes in symptom prevalence across assessments recorded within the first two weeks (14 days) for appetite problems, bowel problems and insomnia.

Discussion

This large, national systematic comparison of ESAS and SAS found that the two measures demonstrated clinically consistent and comparable assessment of symptoms. After adjustment for key demographic and clinical factors, SAS and ESAS showed broadly comparable baseline symptom prevalence and similar longitudinal symptom trajectories, indicating consistency between the two tools over time.

Modest differences in symptom prevalence and longitudinal symptom trajectories were observed for the SAS symptoms of fatigue, bowel problems, and insomnia. These differences may be partly attributable to variation in item wording and the extent to which symptoms are conceptually equivalent to the corresponding ESAS items of tiredness, constipation, and sleep. Although ESAS and SAS are conceptually distinct (measuring symptom intensity and distress respectively) the tools perform similarly on core physical symptoms at the population level. This may reflect how symptom scales are used in clinical practice with clinicians treating them as conversation triggers rather than strict psychometric instruments [19, 20].

Despite its successful use in Australia, routine use of SAS in other countries is limited [6, 14]. Further, several conceptual, measurement, and implementation issues have emerged with the use of SAS over time. These challenges include the interpretation of symptom distress by both patients and clinicians, the cultural adaptation of distress measures, and the familiarity of clinicians with intensity-based measures [20–22]. The adoption of ESAS, by PCOC, may help address these limitations. ESAS also introduces a holistic framework that includes psychological and total well-being, reflecting a broader move towards person-centred care in palliative settings [9, 11]. By demonstrating strong alignment between the two tools, this study suggests that continuity of national benchmarking can be maintained during this transition, while acknowledging that psychometric equivalence was not assessed. Further, the transition from SAS to ESAS has several benefits including the fact that it strengthens Australia's capacity to participate in global benchmarking initiatives. International benchmarking enables jurisdictions to evaluate the quality, reach and effectiveness of palliative care through comparison of key indicators such as symptom burden, access to services, and quality of life [23].

These findings also have important implications for clinical practice. The multidimensional nature of ESAS may allow services to capture a broader range of symptoms that matter to patients and their carers, supporting more holistic assessment and care planning [24]. This is in line with recommendations from an international white paper on outcome measurement that supports the use of multidimensional measures that reflect the holistic nature of palliative care [11].

The observed comparability between ESAS and SAS at the population level has important implications for case-mix refinement and outcome alignment across care settings. The minimal differences identified in this study suggest that adopting ESAS is unlikely to meaningfully change the overall symptom scores reported at a national level. This is particularly relevant as PCOC expands into other care settings including primary care where consistent symptom measurement across settings is essential for valid cross-sector comparisons.

This study has several strengths. It used a large, national dataset with systematically collected standardised symptom assessment data from diverse palliative care settings. The 1:1 matched cohort design was a significant methodological strength; by balancing the cohorts across all sociodemographic and clinical characteristics, and exact matching achieved for primary diagnosis, AKPS, and palliative care phase, we isolated the instrument effect and minimised selection bias.

However, some limitations must be acknowledged. First, the instruments were not completed by the same patients, preventing assessment of within-patient agreement, systematic bias, or proportional bias. Second, the ESAS scores were mapped to SAS categories rather than compared in their full native formats. Although this approach enabled direct comparison, it may underestimate the multidimensional advantages of ESAS or obscure nuances in scale performance. Finally, as with all routinely collected data, measurement accuracy may vary across services depending on patients' ability to self-report, staff training, and workflows.

Despite these limitations, the study provides strong preliminary evidence that SAS and ESAS capture broadly yield comparable symptom assessments in routine palliative care in Australia. These findings support PCOC's transition to ESAS, suggesting that changes can be implemented without disrupting the national longitudinal symptom reporting. Future research could explore the longitudinal agreement between tools at the patient level, the impact of ESAS on clinical decision-making and workflow within Australian palliative care services, psychometric properties (e.g., responsiveness, minimal clinically important difference). Further, these findings provide an important foundation for measurement harmonisation, case-mix refinement, and potential cross-sector integration within evolving Australian palliative care data systems.

Conclusion

This study showed that symptoms obtained using the SAS and ESAS tools produced consistent results and may be used interchangeably. Symptom scores measured at baseline and over time using the two tools showed similar patterns, with only minimal differences, suggesting that observed differences were not clinically meaningful. These findings support registry transition to ESAS and suggest that the change is unlikely compromise the longitudinal benchmarking. The adoption of ESAS has the potential to ensure that psychological distress, an essential component of holistic palliative care, is monitored with the same rigor as physical symptoms. It also ensures continuity in national reporting and enhances alignment with international outcome datasets.

Abbreviations

AKPS

Australia-modified Karnofsky Performance Status

APCOR

Australian Palliative Care Outcomes Registry

EAPC

European Association for Palliative Care

ESAS

Edmonton Symptom Assessment System

PCOC

Palliative Care Outcomes Collaboration

PROMs

Patient-Reported Outcome Measures

SAS

Symptom Assessment Scale

SD

Standard Deviation

SMD

Standardised Mean Difference

STROBE

Strengthening the Reporting of Observational Studies in Epidemiology.

Declarations

Author Contribution

The study was conceptualised by Lisa Redwood (LR) and Sabina Clapham (SC). LR conducted the formal analysis and data curation in collaboration with Animut Alebel Ayalew (AAA). The results were interpreted by AAA, Katherine Clark (KC), Arjun Poudel (AP), Pippa Burns (PB), and SC. The initial manuscript draft was written by LR, SC and PB and was subsequently reviewed and edited by AAA, KC, AP, PB and SC. All authors reviewed and approved the final manuscript.

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Data Availability

All data are provided in the manuscript and accompanying supplementary files.

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Figures

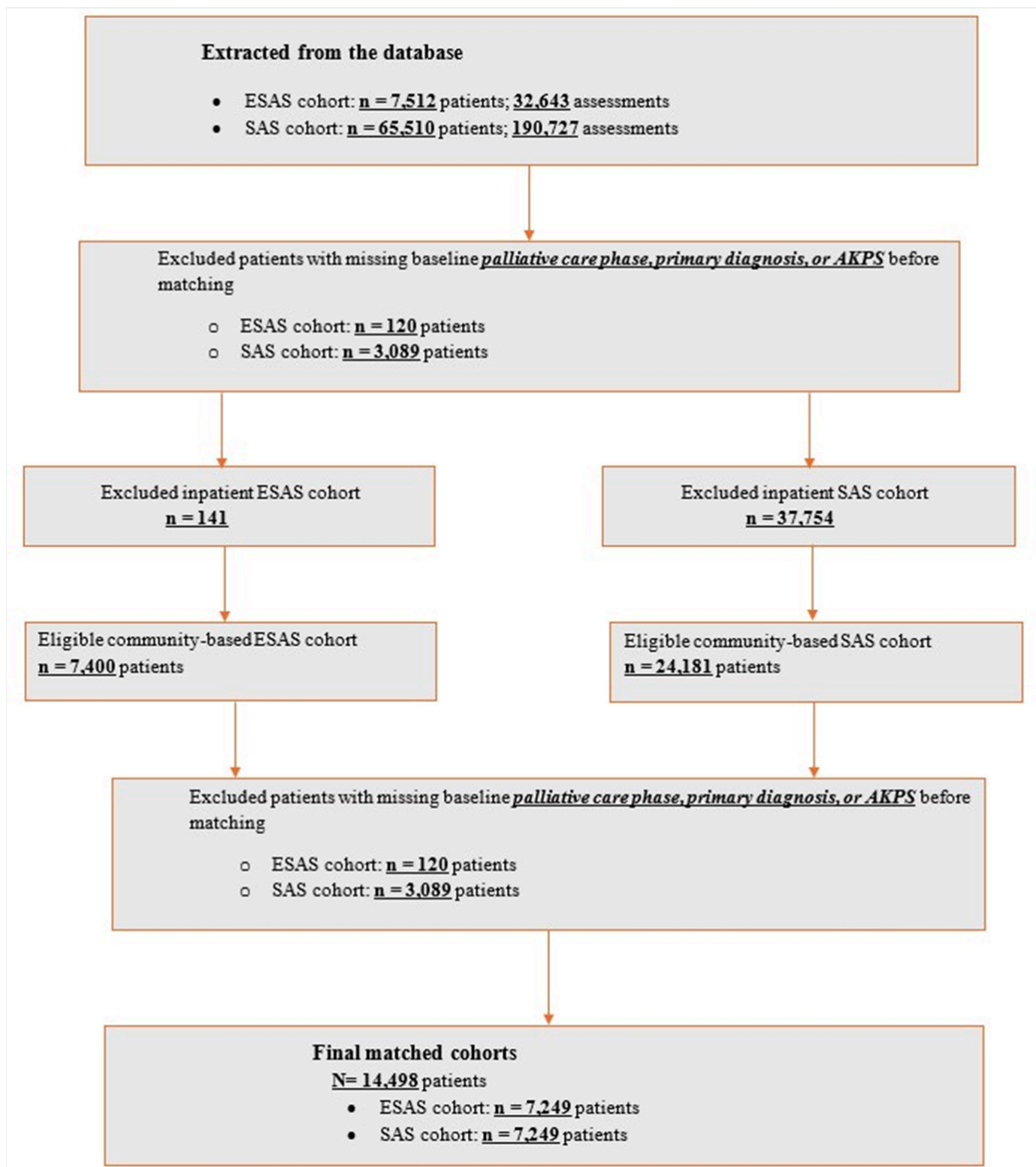
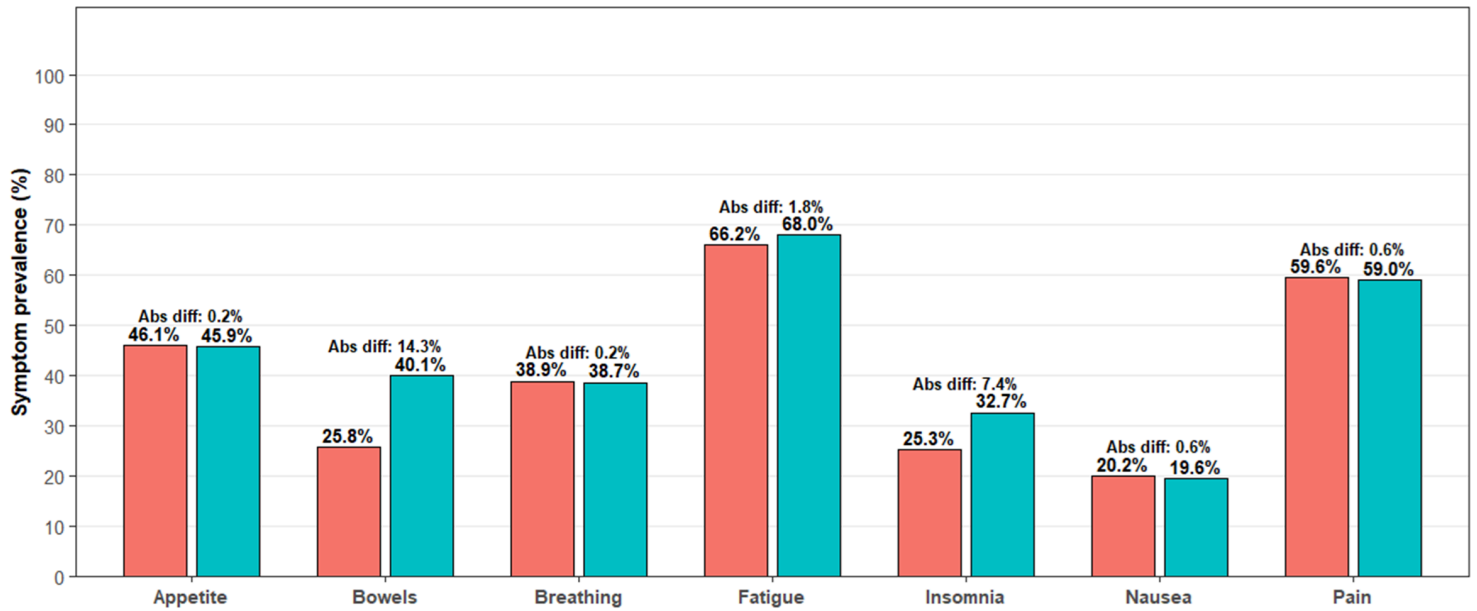


Figure 1

Flow diagram of patient selection and matching for the SAS and ESAS cohorts.

Symptom prevalence for ESAS and SAS at baseline

Assessment tool ESAS SAS



Symptom	ESAS	SAS	Absolute difference	Test	P value
Appetite	46.1	45.9	0.2	Chi-square test	0.841
Bowels	25.8	40.1	14.3	Chi-square test	<0.001
Breathing	38.9	38.7	0.2	Chi-square test	0.821
Fatigue	66.2	68.0	1.8	Chi-square test	0.031
Insomnia	25.3	32.7	7.4	Chi-square test	<0.001
Nausea	20.2	19.6	0.6	Chi-square test	0.473
Pain	59.6	59.0	0.6	Chi-square test	0.525

Figure 2

Comparing of baseline symptom prevalence using the ESAS and SAS

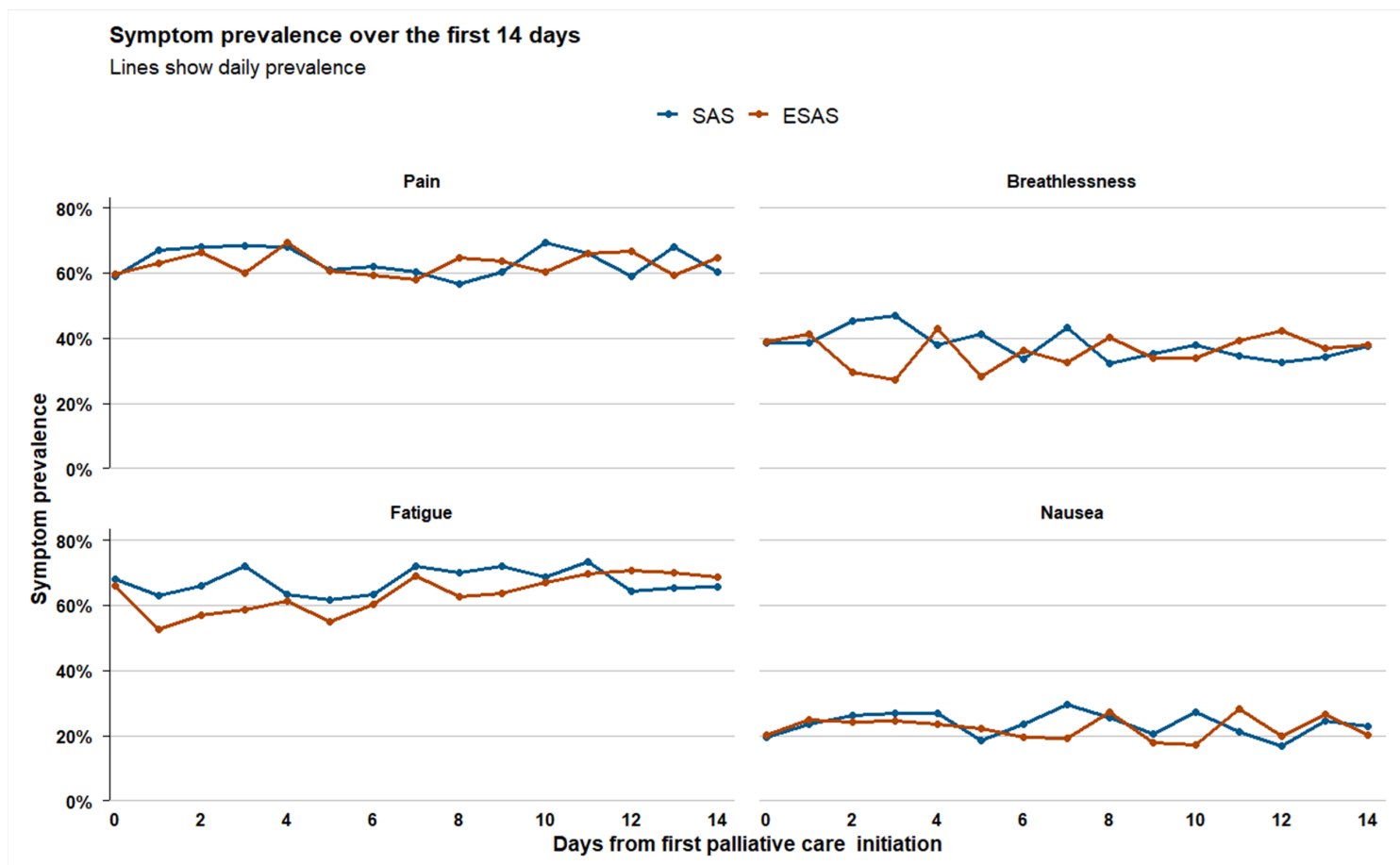


Figure 3

Longitudinal changes in symptom prevalence across assessments recorded within the first two weeks (14 days) for pain, breathlessness, fatigue and nausea

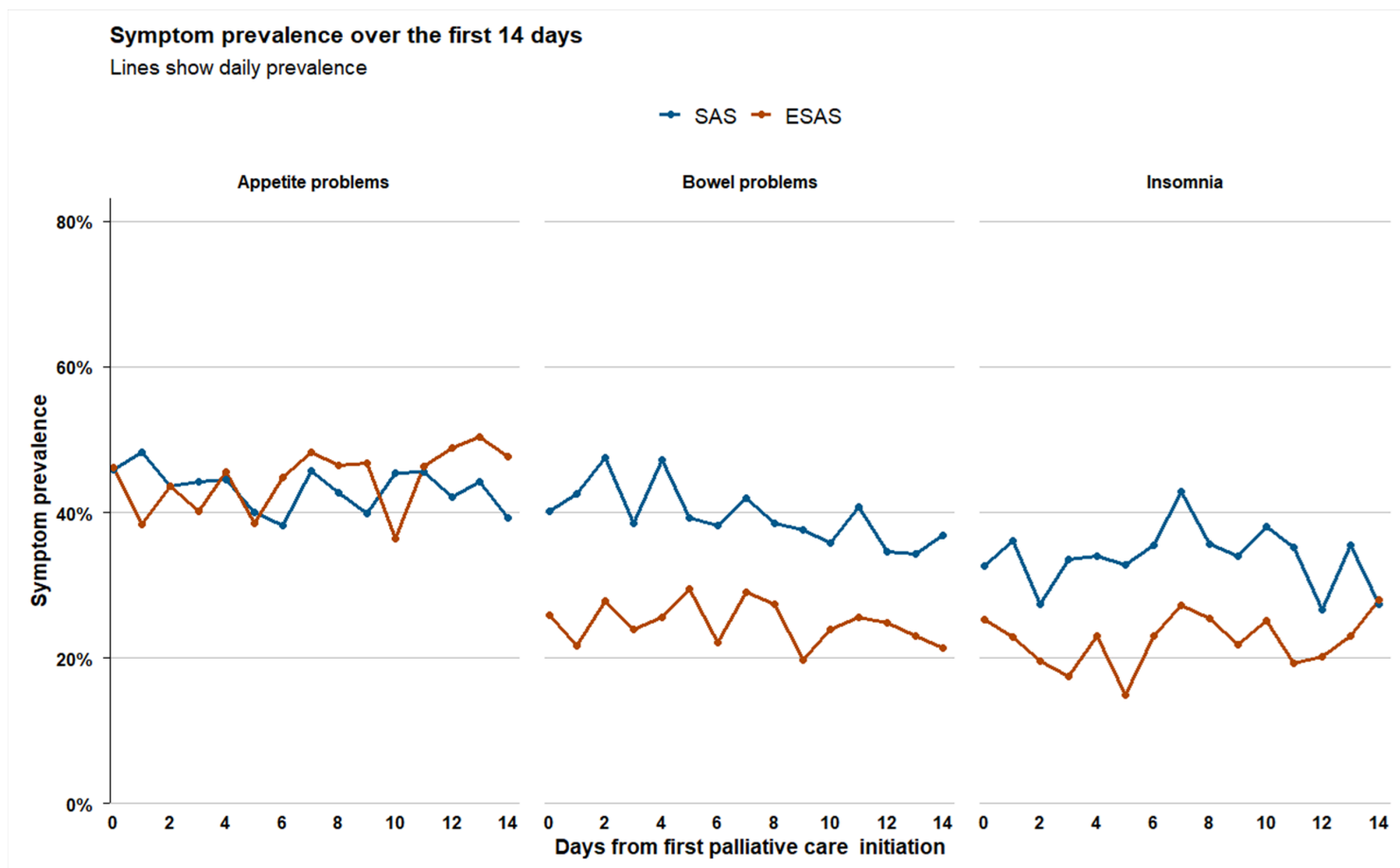


Figure 4

Longitudinal changes in symptom prevalence across assessments recorded within the first two weeks (14 days) for appetite problems, bowel problems and insomnia.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Supplementaryfile1STROBEchecklistcohort.docx](#)