

Disease perception, quality of life, and mental health of newly diagnosed and autologous stem cell transplantation (ASCT)-eligible multiple myeloma patients from a tertiary care hospital in China: a cross-sectional survey study

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BACKGROUND & OBJECTIVES

- Multiple myeloma (MM) is an incurable hematologic malignancy with a chronic progressive course, leading to significant clinical burden and growing healthcare challenges in China.
- Although autologous stem cell transplantation (ASCT) is the gold-standard treatment for transplant-eligible newly diagnosed multiple myeloma (NDMM), its real-world utilization remains low, suggesting a gap between clinical recommendations and practice.
- Patient-centered factors (disease perception, health-related quality of life (HRQoL), mental health) are insufficiently explored.
- This study evaluates these outcomes and compares ASCT vs. non-ASCT to inform patient-centered care and decision-making.

METHODS

- Study Design** A multicenter, cross-sectional observational study was conducted between January and June 2025, enrolling transplant-eligible NDMM patients from two tertiary hospitals in China.
- Data Collection**
 - HRQoL Assessment:** HRQoL was measured using the EuroQol five-dimensional five-level (EQ-5D-5L) instrument and the EQ visual analogue scale (EQ-VAS), generating utility scores based on the Chinese value set.
 - Mental Health Assessment:** Anxiety and depression were evaluated using validated scales: Generalized Anxiety Disorder 7-item (GAD-7) and Patient Health Questionnaire-9 (PHQ-9).
- Clinical and Patient-Reported Data:** Data included demographics, socioeconomic status, disease characteristics (ISS stage, complications), treatment pathway (ASCT vs. non-ASCT), and disease perception.
- Statistical Analysis**
 - Descriptive Analysis:** Baseline characteristics, HRQoL, and psychological outcomes were summarized using appropriate descriptive statistics.
 - Regression Analysis:** Multivariable linear and logistic regression models were used to identify factors associated with HRQoL (EQ-5D utility) and mental health outcomes (GAD-7, PHQ-9), adjusting for potential confounders.
 - Subgroup Analysis:** Patients were stratified by treatment pathway (ASCT vs. non-ASCT) for subgroup analyses, with between-group comparisons performed using independent samples t-tests, Wilcoxon rank-sum tests, or Fisher's exact tests as appropriate; all tests were two-sided, and a P value < 0.05 was considered statistically significant.

RESULTS

➤ Patient characteristics

- A total of 53 transplant-eligible NDMM patients (mean age 57.2 years, mean Body Mass Index (BMI) 26.8 kg/m², 60.4% female) were included. The mean disease duration was 2.0 years, and 18.9% of patients had ongoing disease progression.

- Most patients were farmers (62.3%) and covered by Urban Resident Basic Medical Insurance (71.7%).
- The cohort showed advanced disease stages (ISS II-III: 76.9%) (Figure 1), with common comorbidities including hypertension, osteoporosis, and diabetes (Figure 2).
- Frequent complications included pathological fractures, neurological impairment, and immunosuppression, as shown in Figure 3.

Table 1. Baseline characteristics of ASCT-eligible patients with NDMM

Characteristic	Total (N=53)	
	mean ± SD/%	
Demographics		
Age (years)	57.2 ± 7.6	
Sex (male)	39.6%	
BMI (kg/m ²)	26.8 ± 2.9	
Socioeconomics		
Health insurance type		
Urban Resident Basic Medical Insurance	71.7%	
Urban Employee Basic Medical Insurance	24.5%	
Commercial health insurance	3.8%	
Occupation		
Farmer	62.3%	
Retired	15.1%	
Employed	13.2%	
Unemployed	3.8%	
Disease characteristics		
Disease duration (years)	2.0 ± 1.4	
Disease progression	18.9%	

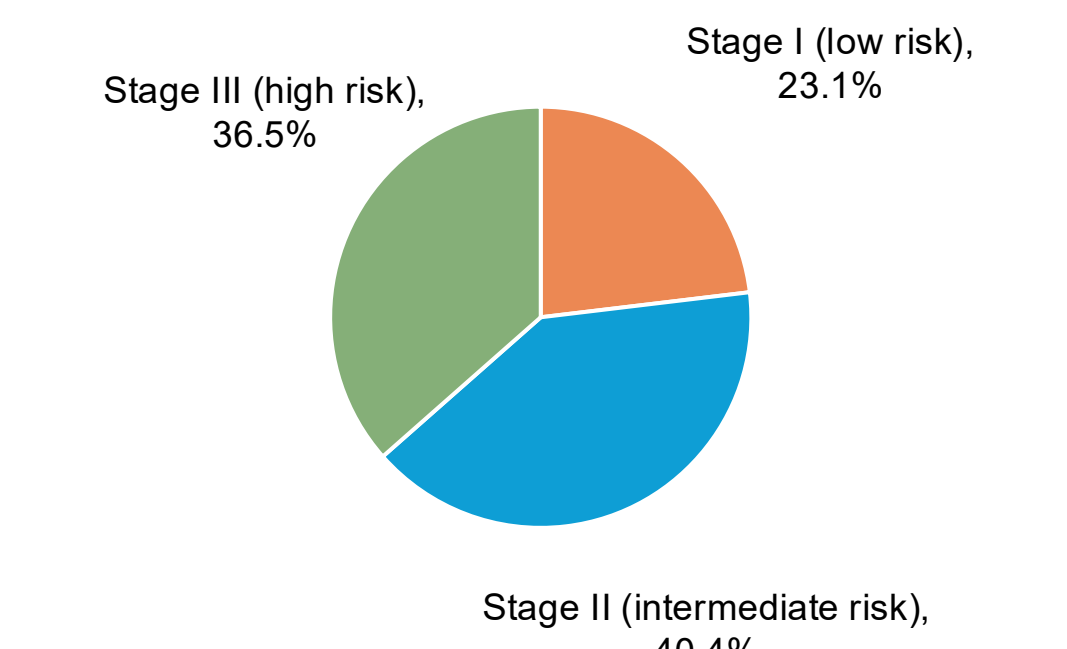


Figure 1. ISS stages of ASCT-eligible patients with NDMM

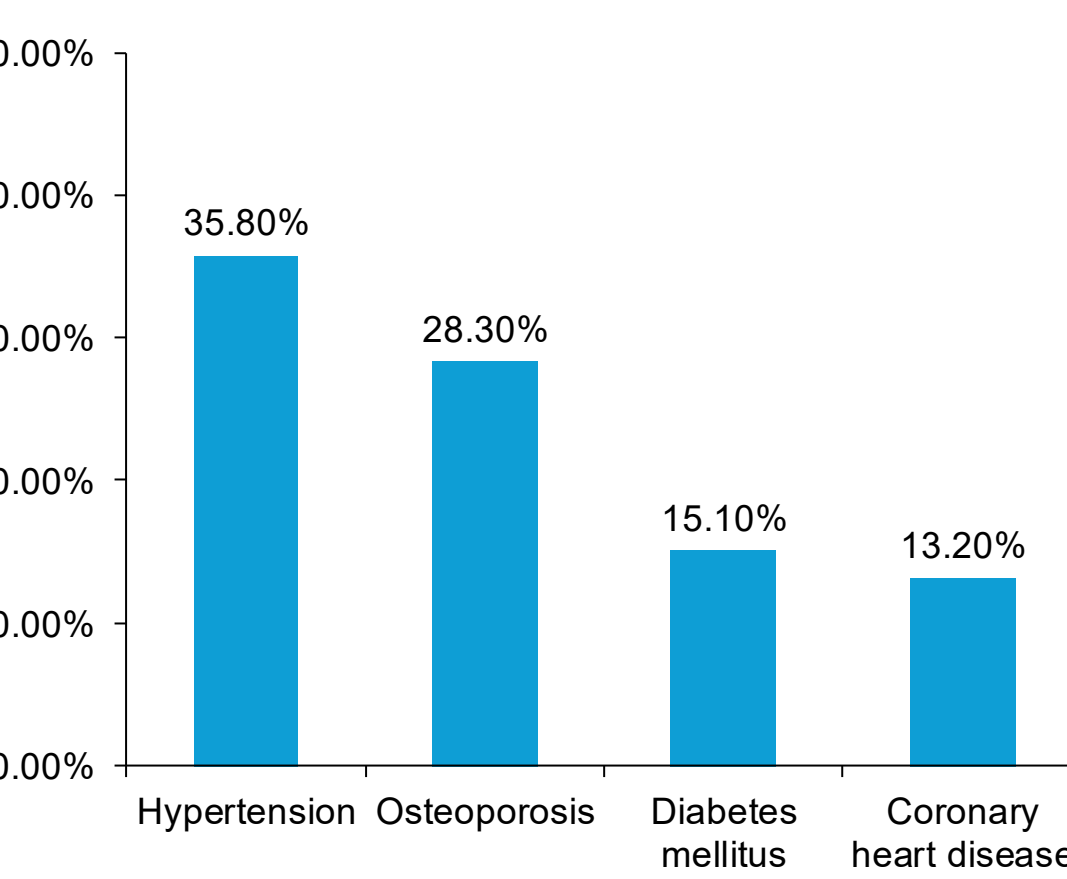


Figure 2. Comorbidities of ASCT-eligible patients with NDMM

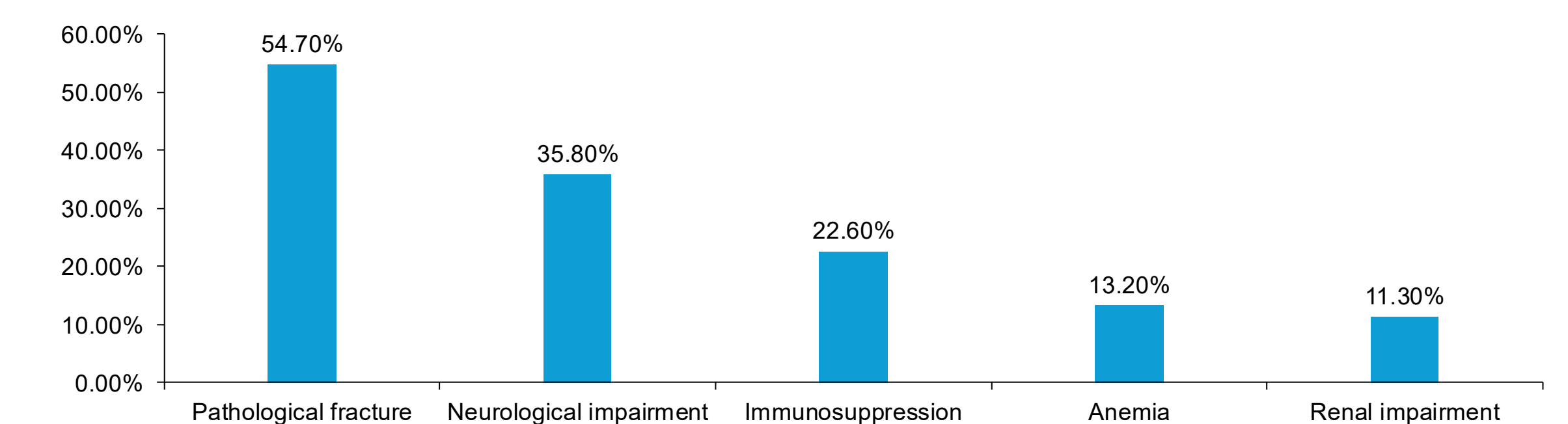


Figure 3. Complications of ASCT-eligible patients with NDMM

➤ HRQoL Outcomes

- Mean EQ-5D-5L utility score:** 0.849 ± 0.233
- Mean VAS score:** 71.8 ± 19.7
- Multivariable analysis identified anemia as the only significant negative predictor of HRQoL, while other factors showed no significant associations (Figure 4).

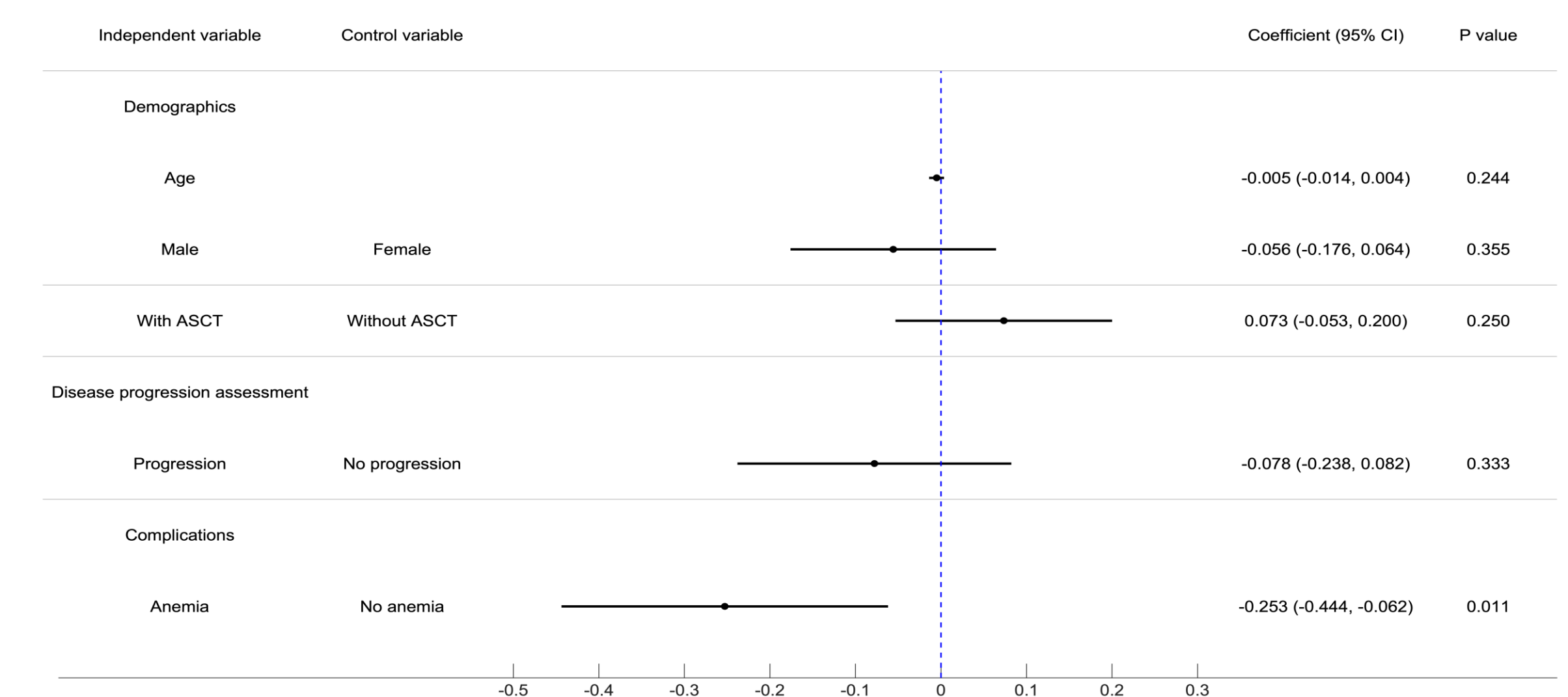


Figure 4. Multivariate linear regression analyses of EQ-5D-5L utility scores in ASCT-eligible patients with NDMM

➤ Mental health outcome

- Mean GAD-7 total score:** 4.7 ± 6.2
- Mean PHQ-9 total score:** 3.1 ± 3.4
- Patients exhibited notable psychological distress, with 13.2% experiencing moderate-to-severe anxiety and 22.6% reporting at least mild depressive symptoms.
- Multivariable analyses identified disease progression as the key driver of psychological burden, significantly increasing both anxiety (GAD-7) and depression (PHQ-9) scores (Figures 5, 6).

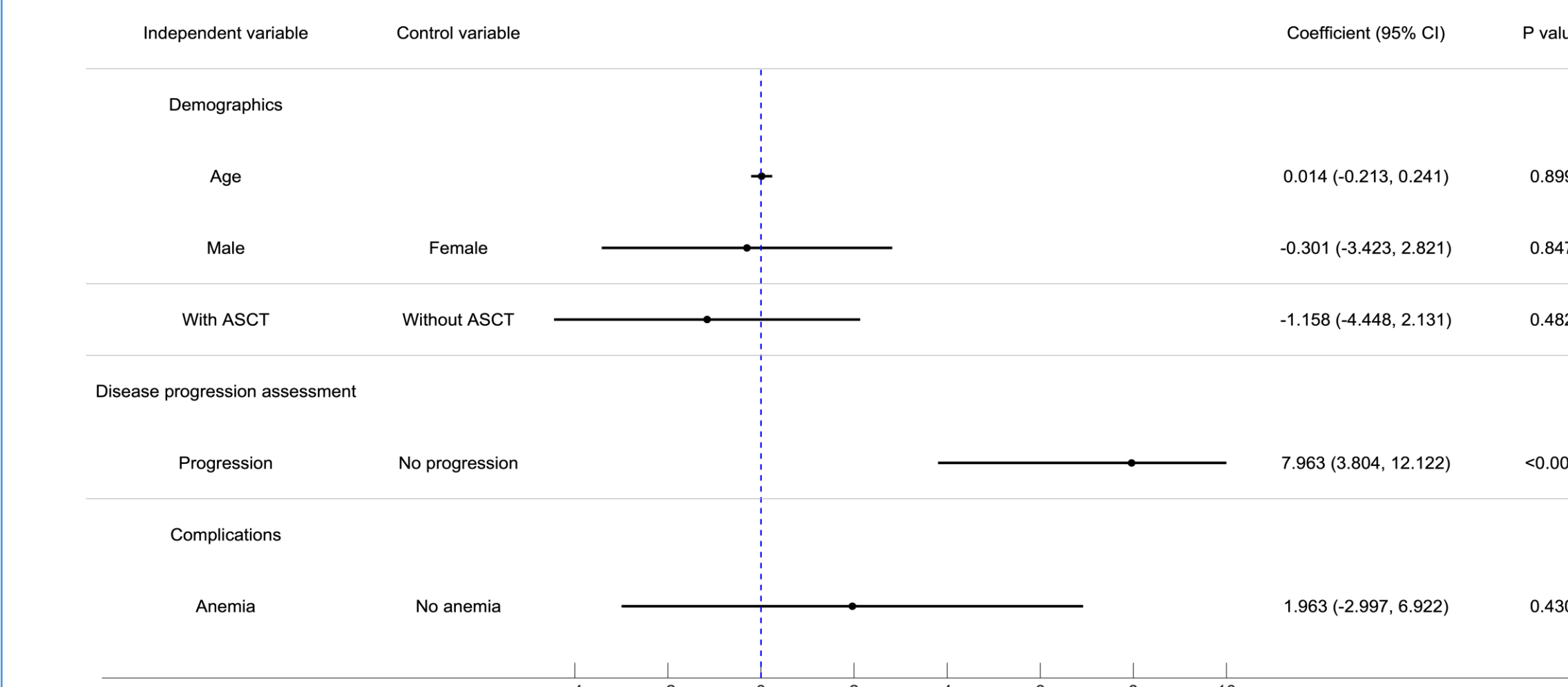


Figure 5. Multivariate linear regression analyses of GAD-7 scores in ASCT-eligible patients with NDMM

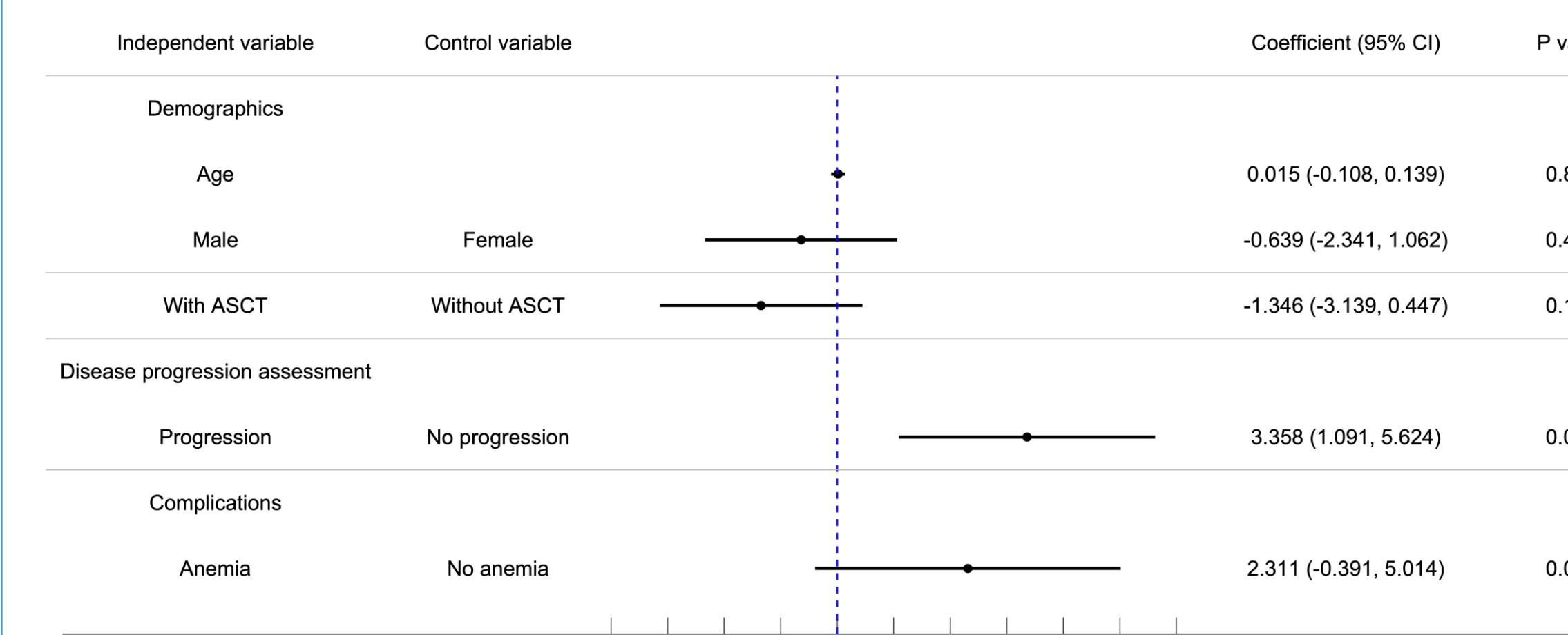


Figure 6. Multivariate linear regression analyses of PHQ-9 scores in ASCT-eligible patients with NDMM

➤ Disease perception

- Patient awareness was generally high, with most identifying bone pain (90.6%) and fatigue (84.9%) as primary symptoms and recognizing pathological fractures/infection risk (79.2%).
- However, awareness of key complications was lower, with only 50.9% recognizing renal impairment and 39.6% liver/spleen involvement; 9.4% also remained uncertain about prognosis (Figure 7).

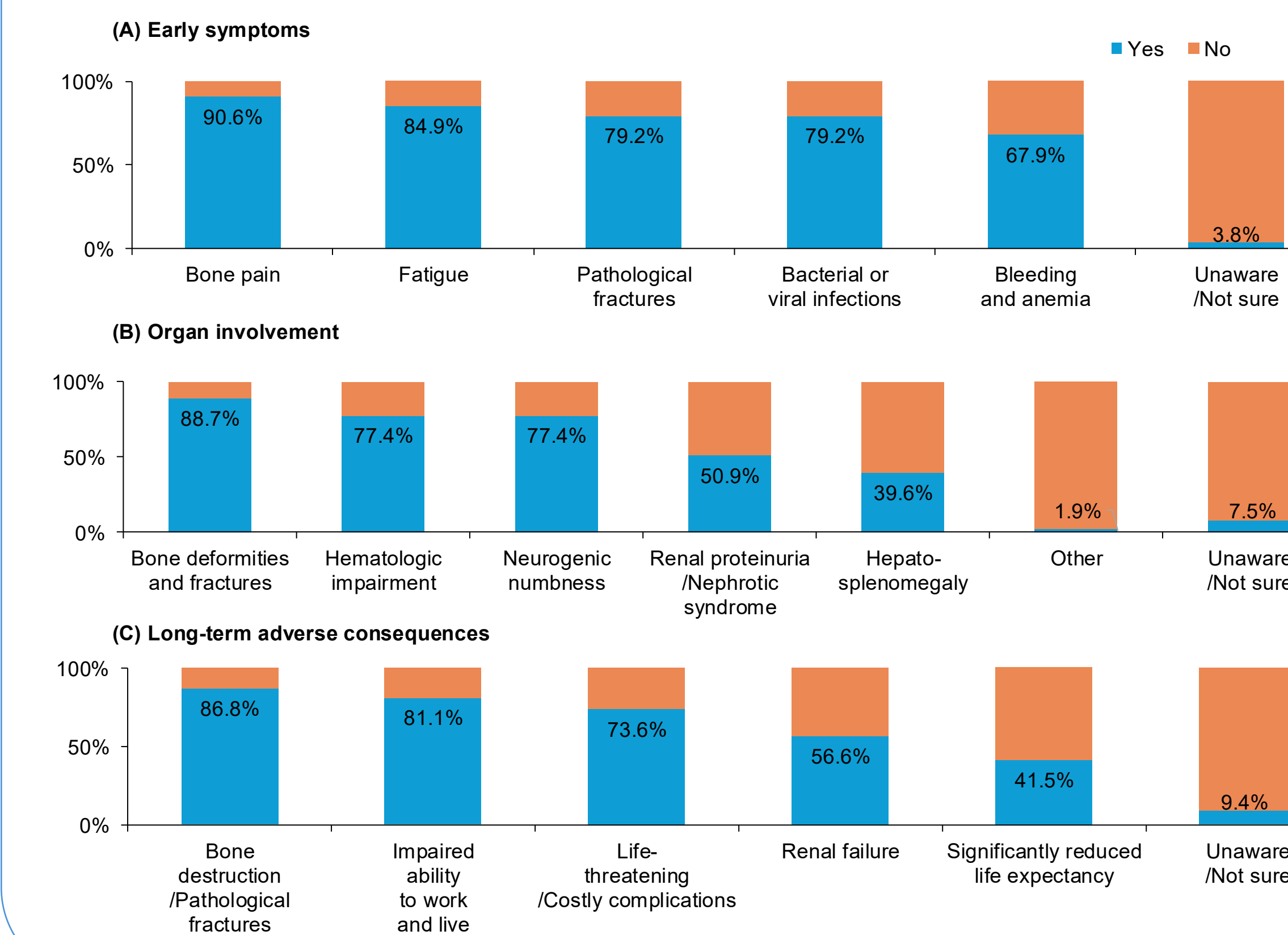


Figure 7. Disease perception among ASCT-eligible patients with NDMM.

➤ Subgroup analysis

- Among the 53 patients, 19 underwent ASCT and 34 did not. ASCT patients were younger and had longer disease duration, with a higher prevalence of osteoporosis (Table 2).
- Non-ASCT patients experienced greater socioeconomic and treatment-related barriers, including higher financial burden and limited insurance coverage (Figure 8).
- Although HRQoL was numerically higher in the ASCT group, psychological outcomes were comparable between groups (Figure 9).

Table 2. Outcomes in ASCT and non-ASCT patients with NDMM

Outcomes	ASCT (N=19)	Non-ASCT (N=34)	P value
	mean ± SD/%	mean ± SD/%	
Age (years)	53.7 ± 8.4	59.2 ± 6.4	0.008
Urban Resident Basic Medical Insurance	52.6%	82.4%	0.021
Disease duration (years)	3.3 ± 1.1	1.2 ± 0.9	<0.001
Osteoporosis	47.4%	17.6%	0.021
HRQoL			
EQ-5D utility	0.918 ± 0.141	0.811 ± 0.266	0.154
VAS	72.7 ± 15.1	71.4 ± 22.0	0.948
Mental health			
GAD-7 total score	4.0 ± 4.7	5.1 ± 6.9	0.977
PHQ-9 total score	2.2 ± 2.9	3.6 ± 3.6	0.078

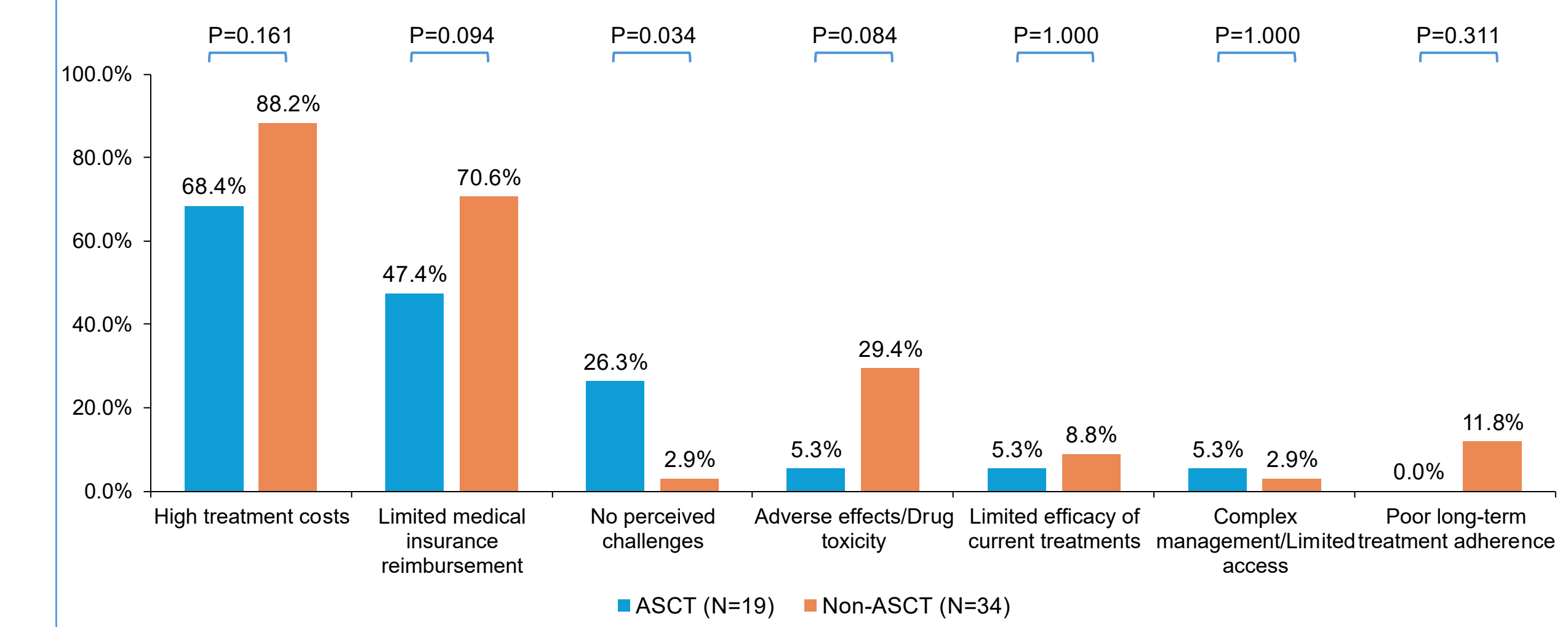


Figure 8. Perceived treatment challenges in ASCT vs. non-ASCT groups

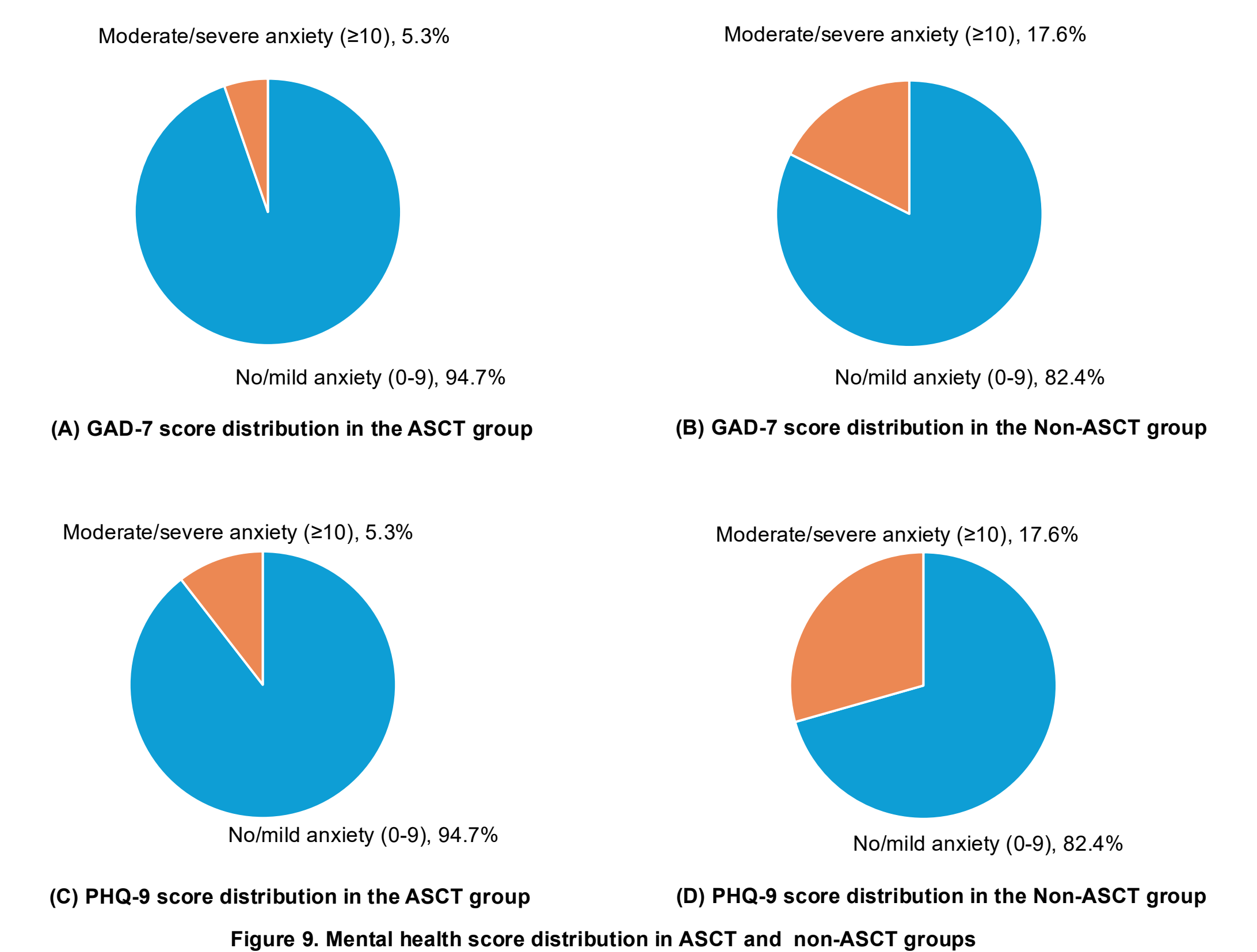


Figure 9. Mental health score distribution in ASCT and non-ASCT groups

CONCLUSIONS

- Anxiety and depression are prevalent among Chinese NDMM patients, with psychological distress and HRQoL significantly compromised by disease.
- Reducing economic barriers and improving disease education are essential to enhance patient-centered care and optimize overall psychological well-being.