#8027 Patient Reported Burden of Indolent Systemic Mastocytosis in a Managed Care Organization

R.S. Zeiger[1,2,3], K.Y. Tse[1], Q Li[2], K. Miller[4], D. Powell[4], B. Lampson[4], E. Sullivan[4], W. Chen[2]

[1]Department of Allergy, Kaiser Permanente Medical Center, San Diego, California. [2]Department of Research and Evaluation, Kaiser Permanente Medical Center, Pasadena, California. [3]Department of Clinical Science, Kaiser Permanente Bernard J. Tyson School of Medicine, Pasadena, CA, US; [4]Blueprint Medicines Corporation, Cambridge, Massachusetts.

Introduction

- Systemic mastocytosis (SM) is a rare, clonal mast cell disease driven by the KIT D816V mutation. SM has multiple different subtypes with indolent SM (ISM) being the most common.
- Because it is a rare disease and presents with heterogeneous symptoms, SM often is characterized by misclassification and substantial delay in accurate diagnosis.

Objectives

- To better understand and explore the impact of ISM by examining the patient journey and burden of disease following diagnosis, especially related to symptoms, quality of life, work, and daily activities.

Methods

- Adult patients ≥18 years of age with ISM confirmed by physicians according to WHO 2016 criteria were invited to participate in a survey. Patient survey data was supplemented with administrative data extracted from the Research Data Warehouse of Kaiser Permanente Southern California (KPSC).
- The patient survey, including investigator-developed questions and the questions of 3 validated instruments (ISM-SAF, PGIS, and SF12v1), was administered Oct 2023 - Jan 2024.
- Demographics, disease severity, and patient-reported disease characteristics were captured and are described below.
- Patient symptom severity was determined based on the Total Symptom Score (TSS) from the ISM-SAF©, a validated symptom evaluation tool. Scores range from 0-110; a symptom score <28 is considered mild and ≥28 moderate/severe symptoms.

Results (Tables 1 & 2)

- 51 eligible ISM patients were invited to participate, 40 completed the survey (response rate = 78.4%). Survey respondents exhibited similar demographics to those who did not respond except for higher family income and education.
- Responded patients had a long history of ISM diagnosis (88% with diagnosis ≥1 year and 25% with a history longer than 10 years).
- 37.5% of survey respondents were non-white, representing a more diverse population compared to previous ISM cohorts studied.
- 45% of ISM patients are not currently employed. The patients with moderate/severe ISM symptoms were even less likely to be employed than patients with mild symptoms.
- Patients with moderate/severe ISM symptoms at the time of the survey reported a longer time to diagnosis with more physician visits and reported a longer duration of ISM compared to patients with mild symptoms.

Table 1. Patient Demographics

Demographics	ISM-SAF© Score		
	TSS <28 (N = 21)	TSS ≥28 (N = 19)	Total (N = 40)
Age (years)			
At diagnosis	48.0±13.7	53.6±12.1	50.7±13.1
Range at diagnosis	11-73	30-72	11-73
At time of survey	52.3±13.9	59.9±11.0	56.0±13.0
Female sex	11 (52.4)	15 (78.9)	26 (65.0)
Race/ethnicity			
Asian/Pacific Islanders, non-Hispanic	1 (4.8)	0 (0)	1 (2.5)
Black, non-Hispanic	1 (4.8)	1 (5.3)	2 (5.0)
Hispanic	5 (23.8)	4 (21.1)	9 (22.5)
White, non-Hispanic	12 (57.1)	13 (68.4)	25 (62.5)
Others/unknown	2 (9.5)	1 (5.3)	3 (7.5)
Years of health plan enrollment	16.8±13.5	19.5±12.2	18.1±12.8
Currently employed	14 (66.7)	8 (42.1)	22 (55.0)
Charlson Comorbidity Index	0.4±0.8	1.2±1.5	0.8±1.3

Table 2. Patient-Reported ISM Diagnosis Journey

Journey to Diagnosis	ISM-SAF© Score		
	TSS <28 (N = 21)	TSS ≥28 (N = 19)	Total (N = 40)
Time to diagnosis (years)			
≤2 years	15 (71.4)	9 (47.4)	24 (60.0)
>2 years	6 (28.6)	10 (52.6)	16 (40.0)
Visits for symptoms to diagnosis			
1 to 5 visits	14 (66.7)	7 (36.8)	21 (52.5)
6 or more visits	7 (33.3)	12 (63.2)	19 (47.5)
Difficulty to ISM diagnosis			
Easy	8 (38.1)	3 (15.8)	11 (27.5)
Neither easy nor difficult	4 (19.0)	5 (26.3)	9 (22.5)
Moderately or extremely difficult	9 (42.9)	11 (57.9)	20 (50.0)
Duration of ISM diagnosis (years)			
<1	3 (14.3)	2 (10.5)	5 (12.5)
1 to 4	8 (38.1)	5 (26.3)	13 (32.5)
5 to 9	6 (28.6)	6 (31.6)	12 (30.0)
≥10	4 (19.0)	6 (31.6)	10 (25.0)

Figure 1. Diagnosing Specialty
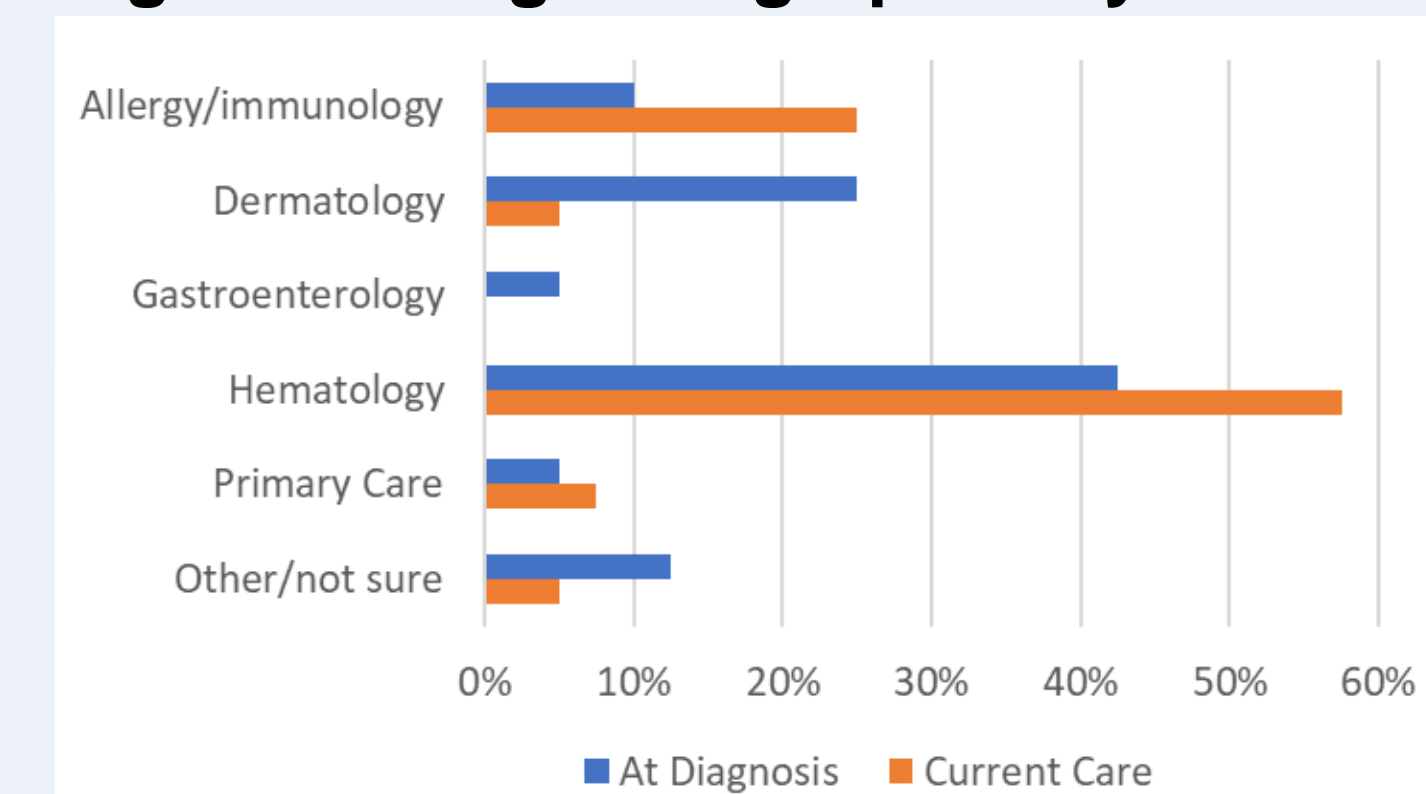
- Approximately 50% of patients were diagnosed by Hematology or Allergy/Immunology specialists, yet these clinicians account for nearly 80% of ongoing patient management.

Table 3. ISM Symptoms at Diagnosis & Time of Survey (Current)

Symptoms present	ISM-SAF© Score					
	TSS <28 (N = 21)		TSS ≥28 (N = 19)		Total (N = 40)	
	At Diagnosis	Current	At Diagnosis	Current	At Diagnosis	Current
Skin	16 (76.2)	18 (85.7)	19 (100)	19 (100)	35 (87.5)	37 (92.5)
GI	6 (28.6)	8 (38.1)	12 (63.2)	14 (73.7)	18 (45.0)	22 (55.0)
Fatigue	5 (23.8)	5 (23.8)	15 (78.9)	17 (89.5)	20 (50.0)	22 (55.0)
Neurological	7 (33.3)	8 (38.1)	17 (89.5)	18 (94.7)	24 (60.0)	26 (65.0)
Pain (muscle, joint, bone)	6 (28.6)	8 (38.1)	11 (57.9)	16 (84.2)	17 (42.5)	26 (60.0)
Respiratory	2 (9.5)	0 (0.0)	1 (5.3)	2 (10.5)	3 (7.5)	2 (5.0)
Bone (osteoporosis/osteopenia)	4 (19.0)	7 (33.3)	6 (31.6)	10 (52.6)	10 (25.0)	17 (42.5)
Anaphylaxis (or severe allergic reaction)	6 (28.6)	5 (23.8)	5 (26.3)	6 (31.6)	11 (27.5)	11 (27.5)

Figure 2. ISM Impact on QOL

Mean PCS and MCS Scores

PCS significant at p=0.009 and MCS p=0.007 using Kruskal-Wallis test for continuous variables.

Results (continued)

- Multi-symptom prevalence increases over time for ISM patients, with skin symptoms as the most prevalent at diagnosis and currently. **(Table 3)**
- Pain, Bone, GI, Neurological and Fatigue symptoms show a noticeable increase from diagnosis to the current period, especially in the moderate/severe TSS group. **(Table 3)**
- Patients with moderate/severe ISM symptoms reported significantly impaired quality of life (QOL). **(Figure 2)**
- Majority of patients (65%) reported the frequency of their symptoms increased since diagnosis; 48% of patients reported the severity of symptoms worsened. **(Figure 3)**
- 28% of ISM patients reported that their disease had impacted their ability to work and 28% reported reduced hours at work; 10% had gone on medical disability due to ISM. These results were more pronounced in patients with moderate/severe ISM symptoms.
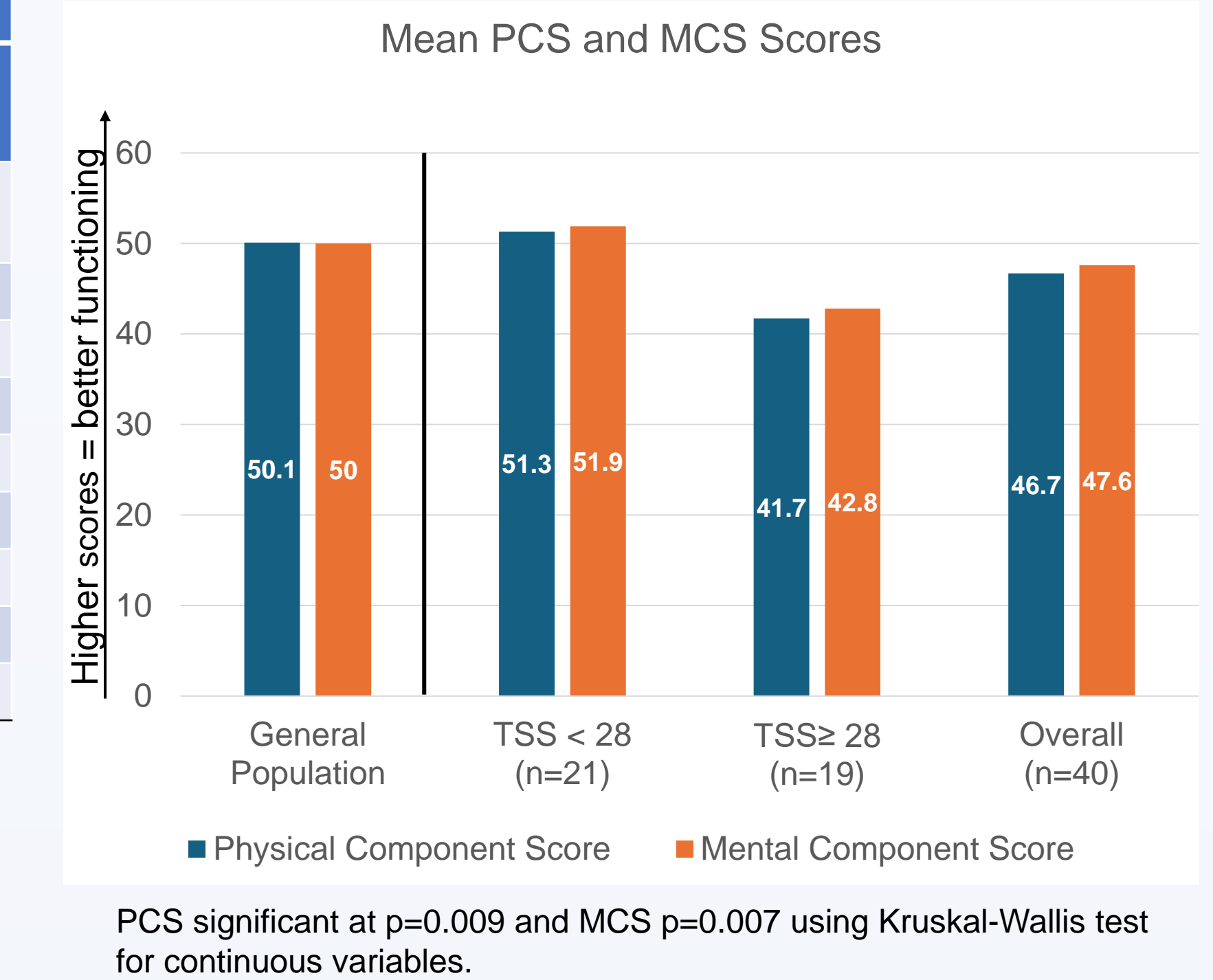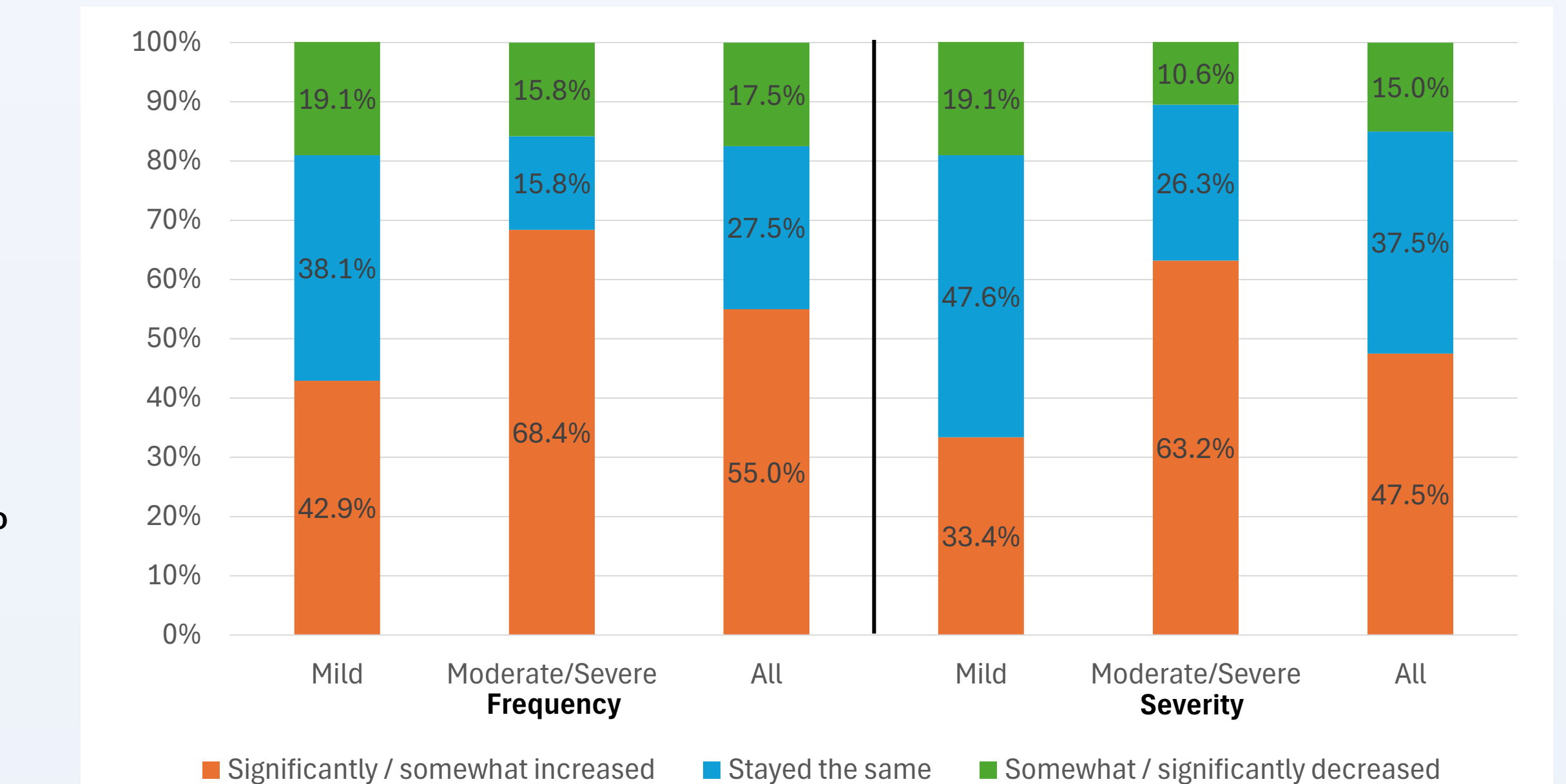
Figure 3. Symptom Change Since Diagnosis

Conclusions

- The survey results from a racially diverse cohort of patients with ISM showed that 50% of the patients reported moderate to severe ISM symptoms despite receiving active care by a physician.
- Half of the patient cohort reported a long and difficult journey to a diagnosis with ISM.
- Patients with moderate to severe ISM symptoms had impaired mental and physical functioning.
- ISM symptoms likely impact patient's ability to work since the employment rate for ISM patients is 55%, below the 2023 California average of 65%-80% for individuals of similar age to this cohort.
- The substantial disease burden associated with moderate to severe ISM highlights the need for more expedient diagnosis and successful management.