

Psychosocial impact of mild to severe hemophilia B on affected adults and children: methods and demographics of the bridging hemophilia B experiences results and opportunities into solutions (B-HERO-S) study

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Objective

B-HERO-S was designed to better understand the presentation, management and psychosocial impact of mild-moderate-severe hemophilia B on adults (PWH), children (CWH) and caregivers (CG) of CWH.

Introduction

- Initiated in 2009, the global HERO program and subsequent 10-country HERO quantitative study sought to investigate the psychosocial issues impacting PWH and CG and others that support them.^{1,2}
- The HERO study highlighted challenges in access to treatment, difficulty in managing the pain/disability arising from joint damage and a negative impact on careers and interpersonal relationships for both PWH and CG of CWH.
- As HERO covered a broad group of mostly moderate-severe males (PWH and CWH), less is known about the psychosocial impact of mild-moderate-severe hemophilia B, particularly for women and girls with FIX activity <40%.
- B-HERO-S was designed in collaboration with the hemophilia community (healthcare professionals, advocacy organizations, and patients/caregivers) to assess the needs in this population.

Methods

- US PWH (either gender, age ≥18 years) and CG (age >18 years, non-parents allowed) of CWH (either gender, age <18 years) were recruited through posting of IRB-approved information letters on websites/social media pages of 3 patient organizations (Hemophilia Federation of America, Coalition for Hemophilia B and National Hemophilia Foundation) to complete distinct ~1-hour, internet-based IRB-approved surveys (Sept. 24 to Nov. 03, 2015).
- Surveys assessed demographics, clinical presentation and management, impact of hemophilia on education, work, and relationships, and health-related quality-of-life, including patient reported outcomes.
- PWH/CG self-reported hemophilia severity; PWH additionally self-reported baseline FIX activity. CG reported also about their spouse/partner.

Results

Demographics

The 299 PWH included 86 women with mostly moderate/mild hemophilia B. All 150 CG were parents describing their oldest CWH (age <18 years) including 29 affected girls (Table 1). Median ages of male/female CWH were similar, but the youngest affected female CWH was older than the youngest affected male CWH (4 years for girls vs. <1 year for boys).

Table 1 Demographics

	PWH (n=299)	CG (n=150)	CWH (n=150)
Hemophilia Severity, n (%)			
Mild	74 (25%)		27 (18%)
Moderate	189 (63%)		84 (56%)
Severe	32 (11%)		33 (22%)
Inhibitor	4 (1%)		6 (4%)
Gender, n (%)			
Male	213 (71%)	34 (23%)	121 (81%)
Female	86 (29%)	116 (77%)	29 (19%)
Age, median (min, max)	29 (18,70)	35 (21, 53) 35 (24, 53) ^a	10 (<1,18)

^aMedian age of spouse/partner

Adult patients with hemophilia

- Most PWH were Caucasian (89%) and non-Hispanic (60%); for women PWH there was greater representation by Hispanic participants (62%).
- A large proportion of PWH were educated past high school (88%), employed (81%), and married or in a long-term relationship (54%); >80% were from large/small-to-medium sized cities (50%/33%).
- Median age at diagnosis was 6.5 years and was older for those with mild or moderate hemophilia (14/6 years) than severe hemophilia (<1 year); median age at diagnosis was similar for men (7 years) and women (6 years).
- Most of those with mild-moderate severity reported FIX activity consistent with severity (Table 2); 25% of mild patients had FIX <10% and 75% had FIX <20%. FIX activity for patients with severe hemophilia may be complicated by use of prophylaxis.

Table 2 Self-reported hemophilia severity vs. reported factor level

	Mild (n=74)	Moderate (n=189)	Severe (n=32)
FIX level reported, n (%)	61 (82%)	179 (95%)	28 (88%)
Median, IQR (25th, 75th percentile)	17 (10, 20)	3 (3, 5)	1 (0, 3)
Severity based on factor levels			
Mild (6-50%)	82%	8%	11%
Moderate (2-5%)	16%	91%	32%
Severe (0-1%)	0%	1%	57%

IQR: Interquartile range

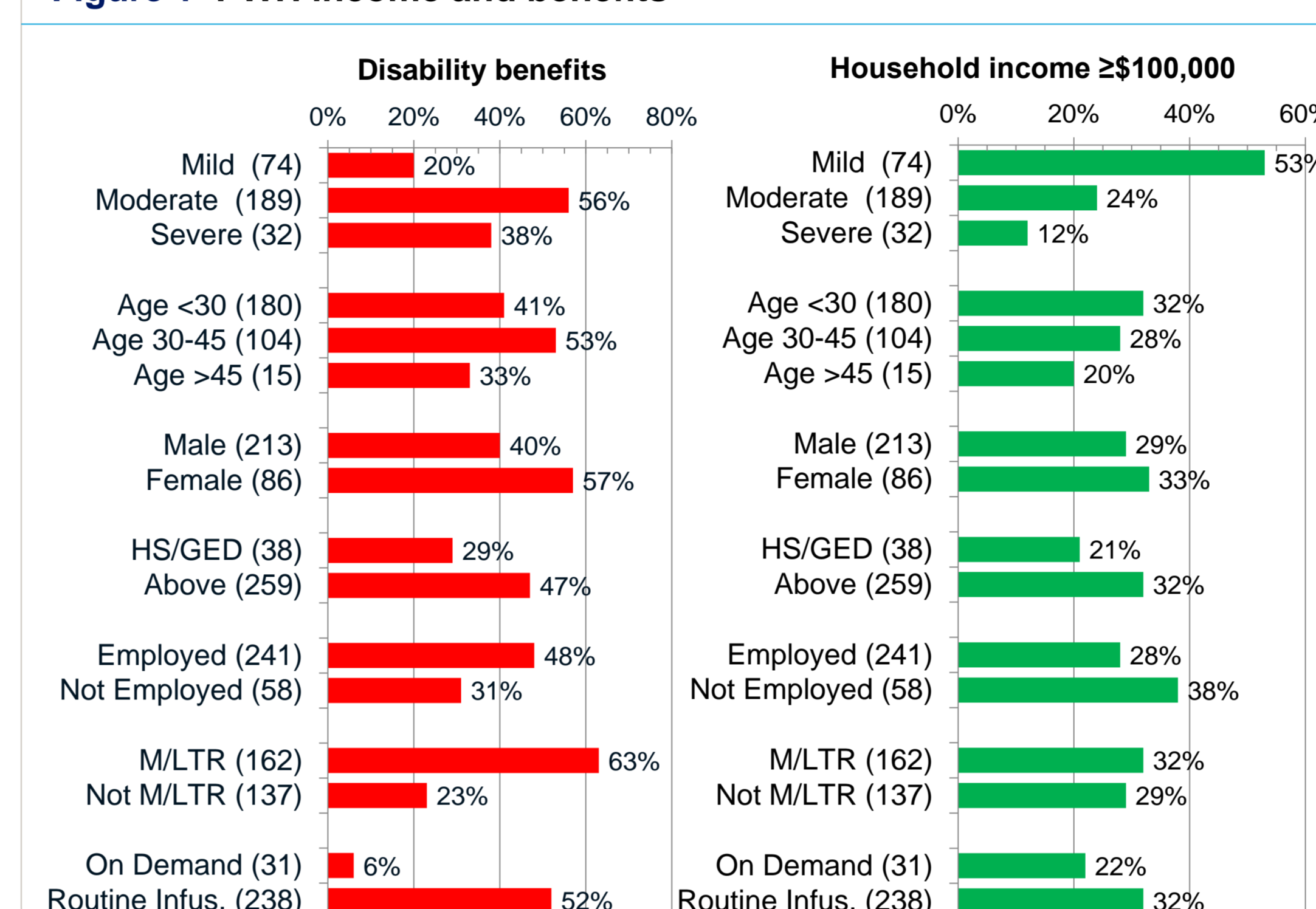
- Arthritis was the most common hemophilia-related comorbidity, which was more common in those with moderate-severe hemophilia (Table 3).
- Chronic pain was more common with increased hemophilia severity as well as with increased age (13% overall, 40% age >45 years).
- Anxiety and depression were more common in women than men (43% vs. 15% and 42% vs. 14%), and in PWH aged 30-45 years (34% and 31%).
- Other reported comorbidities included osteoporosis/fractures (43%/11%).
- Viral illnesses were reported infrequently (HIV 9%, HCV 5%). Most HIV patients had current (24%) or prior (59%) treatment; HCV treatment was reported as current, prior and eradicated in 9%, 35% and 17% of patients, respectively.

Table 3 Adult PWH self-reported comorbidities related to hemophilia

	All	Severity			Treatment	
		Mild (n=74)	Moderate (n=189)	Severe (n=32)	On Demand (n=31)	Routine Infusions (n=238)
Arthritis						
	48%	26%	55%	59%	23%	52%
Pain						
Acute/intermittent	29%	32%	26%	31%	13%	30%
Chronic/persistent	13%	12%	11%	28%	6%	13%
Psychological						
Anxiety	23%	18%	27%	19%	13%	26%
Depression	22%	14%	25%	22%	6%	26%

- Overall, 45% of PWH received disability benefits, including 20% of those with mild hemophilia and 56% of those with moderate hemophilia. PWH treated with routine infusions had a higher report of disability benefits (52%) than those treated on demand for bleeding (6%) (Figure 1).
- Overall, 30% of adult PWH had a household income ≥\$100,000, and only 12% of those with severe hemophilia had income ≥\$100,000 (Figure 1).

Figure 1 PWH income and benefits

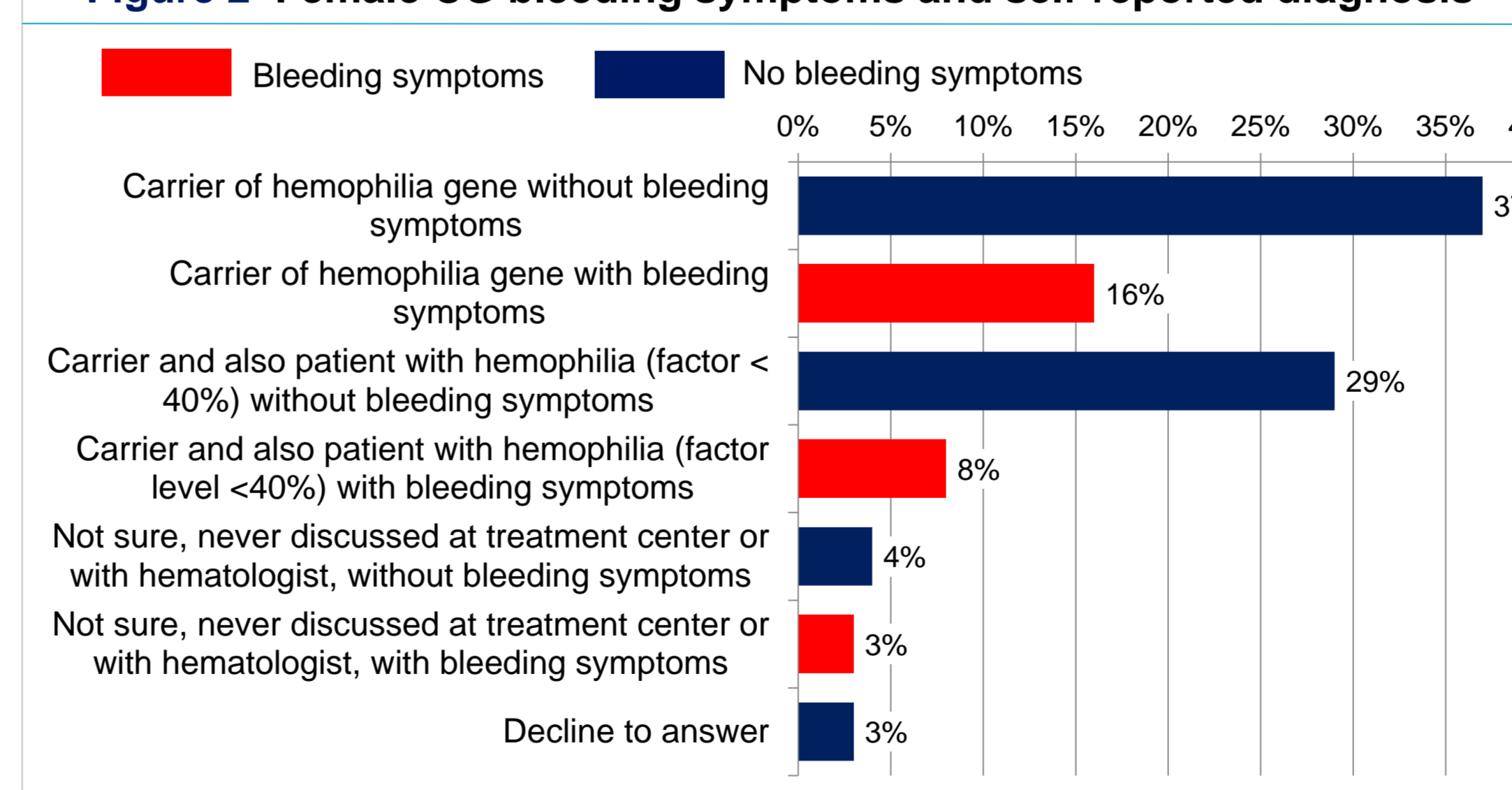


M, married; LTR, long-term relationship; HS, high school; GED, general education development; Routine Infus., Routine Infusions. Numbers in parentheses refer to number of respondents.

Caregivers of children with hemophilia

- Most CG were Caucasian (81%) and non-Hispanic (60%), educated past high school (86%), employed (86%, spouse/partner 97%), and married/in a long-term relationship (89%). Approximately 80% of CG were from large (52%) or small-to-medium-sized cities (27%).
- The majority of CG reported one CWH (93%) while 7% reported two; 93% (114/122) of CG with affected sons and all 31 CG with affected daughters reported having one affected CWH of that gender.
- When asked about bleeding symptoms, 34/116 mothers reported some bleeding symptoms (Figure 2), most commonly bruising (76%) and heavy menstruation (71%); 62% reported taking FIX or other agent for bleeding.

Figure 2 Female CG bleeding symptoms and self-reported diagnosis

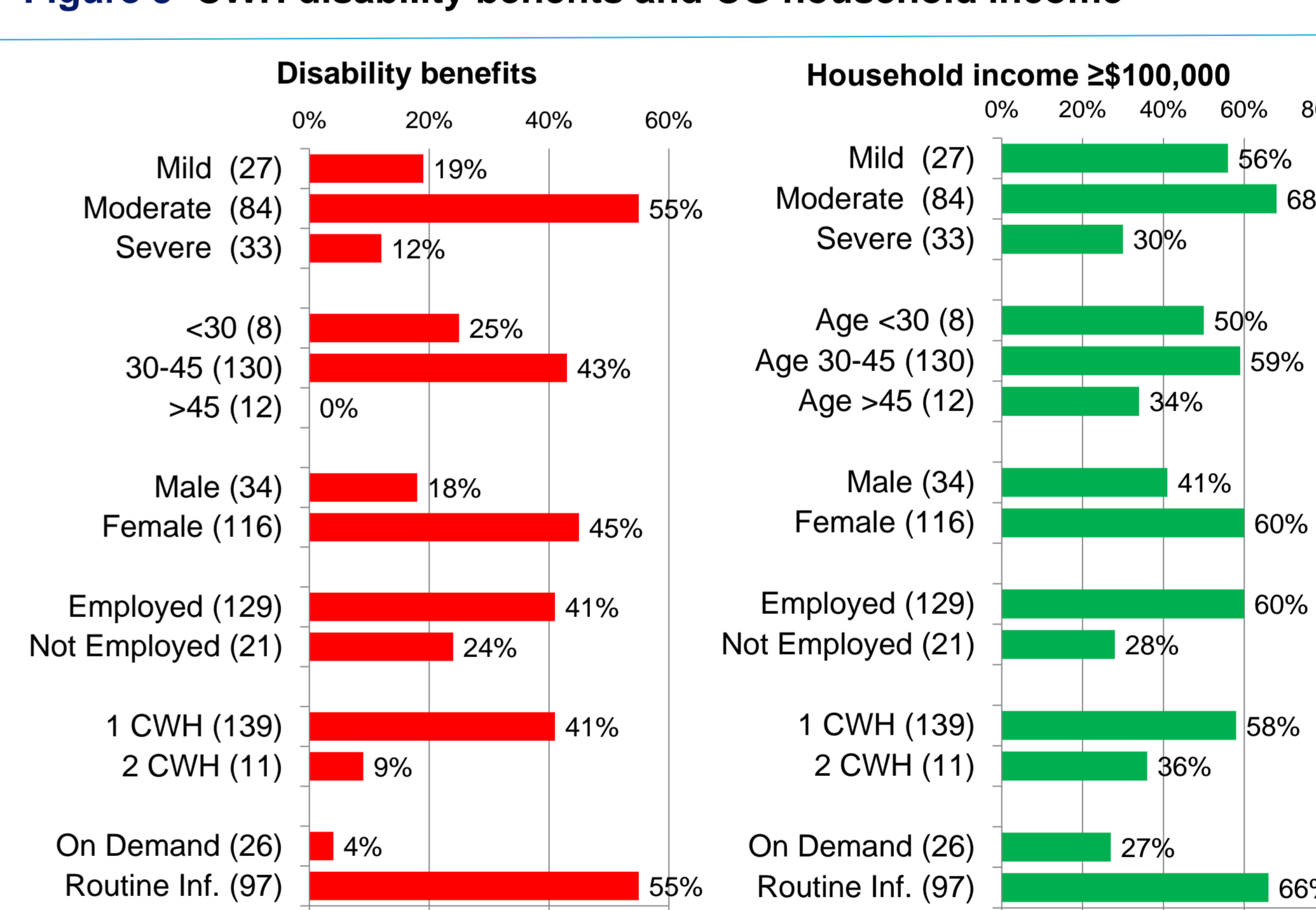


- Only 39% of CWH received disability benefits, with higher percentages among those with mild (19%) and moderate (55%) hemophilia than severe (12%) (Figure 3); CWH on routine infusions had higher percentages receiving disability benefits (55%) than those treated for bleeds only (4%).
- More than half (56%) of CG had a household income ≥\$100,000.

Conclusions

- B-HERO-S provides an unprecedented opportunity to study the psychosocial impact of mild-moderate-severe FIX deficiency in both women and men.
- A large number of respondents with mild-moderate hemophilia B completed the survey including affected women and CG of affected girls.
- Pain, anxiety and depression were reported in mild-moderate hemophilia and in affected women.
- Higher than expected percentages of PWH and CWH receive disability benefits, particularly those with mild-moderate hemophilia.

Figure 3 CWH disability benefits and CG household income



Numbers in parentheses refer to number of respondents; Routine Inf., Routine infusions.

Limitations

- Potential recruitment bias was a limitation of this study, which likely impacts the ability to use the results quantitatively but does not impact ability to draw qualitative conclusions. Three advocacy organizations supported recruitment to try to reach all eligible patients; the profile of PWH/CG that responded may be more representative of the organizations that posted information earliest.
- PWH with mild/moderate hemophilia B or affected women that had been excluded from most prior studies may be more likely to participate in this study.

References

- Forsyth AL, et al. *Patient Prefer Adherence* 2015 Oct 29;9:1549-60.
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Conflict of interest disclosure

All authors have potential conflicts of interest. Please refer to the abstract.

This trial was sponsored by Novo Nordisk and is registered with ClinicalTrials.gov (NCT02568202). The authors acknowledge the medical writing assistance of Kathy Carpenter, PhD, Novo Nordisk, Inc.

