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A preliminary study of a health related quality of life assessment of priority symptoms in advanced lymphoma: the National Comprehensive Cancer Network-Functional Assessment of Cancer Therapy – Lymphoma Symptom Index

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Abstract

Despite the recent advances in cancer therapeutics for lymphoma (Lym), a continuum of disease, treatment and psychological challenges, adversely impacting health-related quality of life, remain for the clinical management of the patient with Lym. In response, this study presents the development and validation of the National Comprehensive Cancer Network-Functional Assessment of Cancer Therapy (NCCN-FACT) Lymphoma Symptom Index-18 (FLymSI-18). Patients with advanced Lym ($n = 50$) rated the significance of 40 symptoms, and hematologist–oncologists ($n = 10$) rated these symptoms according to importance and disease-related or treatment-related origin. Patient symptom priorities were unified with clinician priorities for

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Supplementary material **available online**
Supplementary Appendix: NCCN-FACT FLymSI-18

symptom measurement in Lym for instrument development. Reliability estimates indicate that FLymSI-18 has acceptable internal consistency ($\alpha = 0.87$), content validity and concurrent validity as indicated by moderate to strong correlations with the FACIT (Functional Assessment of Chronic Illness Therapy). Overall, the FLymSI-18 provides evidence for its reliability and validity as a brief assessment of the most important symptoms associated with advanced Lym in the clinical trial research environment.

Keywords

FLymSI-18; lymphoma; HRQOL; Symptom Index

Introduction

In 2011, approximately 75 000 new cases of lymphoma (Lym), including both Hodgkin (HL) and non-Hodgkin (NHL), were diagnosed in the United States [1,2]. Although past, as well as recent, advances in cancer therapeutics of lymphoma have considerably improved survival for these patients, a series of disease-related, treatment-related and psychological challenges arise for the clinical management of the patient with lymphoma. This is due in part to longitudinal repetitive episodes of progressive disease with lengthy treatment periods leading to remission phases that may adversely affect patient health-related quality of life (HRQOL) [3–11].

In fact, evidence indicates that these treatment, disease and psychosocial burdens may last well into the cancer trajectory, greatly impacting the physical and mental health of patients with both HL and NHL [12–18]. In a recent review of empirically published studies, survivors of HL reported the majority of issues in role physical, social and cognitive functioning, general health, fatigue and financial problems [17]. As well, older age and female HL survivors previously treated with a combination of therapies reported worse HRQOL. Survivors of NHL reported the most problems in physical functioning, appetite loss, vitality and financial problems, and were less likely to utilize exercise, which enhances HRQOL [17]. Recent work has examined the longitudinal effects of disease and treatment, including the relationship between quality of life and disease activity [12–18]. For example, in a study of 222 patients with follicular lymphoma (FL), researchers demonstrated that various aspects of patient reported outcomes (PROs) differ according to disease state in patients with FL, utilizing the Functional Assessment of Cancer Therapy – Lymphoma (FACT-Lym) [12]. Relapsed patients were more likely to experience worse HRQL and other PROs than newly diagnosed patients or patients in partial/complete remission.

Despite such evidence, little is known as to what specific symptoms or concerns affect patients with lymphoma during treatment. Although several widely used, well-validated, disease-specific HRQOL measures exist, the multidimensional nature and composition of these instruments may be of limited value in the detection of significant symptoms and/or treatment-related or disease-related concerns, especially in the realm of clinical trials [19,20]. In response to the need to address HRQOL for NHL, a lymphoma-specific instrument (FACT-Lym) was developed [21]. However, the Food and Drug Administration

(FDA) implemented specific recommendations indicating that industry claims need to be supported utilizing symptom- as well as domain-specific patient-reported outcome measures tailored to patient and oncologist feedback [19,22–24]. Thus, the creation of an additional measure utilizing specific indexes designed to amass lymphoma-specific symptoms sensitive to the effects of treatment was deemed an imperative.

Therefore, the present study was conducted to meet the FDA guidelines for PROs and advance the scientific knowledge of HRQOL measurement systems. The primary objective of this study was to identify patients' most significant lymphoma-specific symptoms, compare them with symptoms identified by oncologists, and utilize patient input from both sources to develop a new index and provide evidence for its reliability and validity. The Functional Assessment of Cancer Therapy – Lymphoma Symptom Index-18 (FLymSI-18) was developed through the assessment of patients' priority symptoms as well as oncology-endorsed symptoms/concerns as predominantly disease-related, treatment-related, or related to patient functional well-being, significant to the identification of HRQOL for lymphoma.

Methods

Design, setting and study population

The data for this study were derived from a larger cross-sectional study that developed patient-reported symptom indexes for 11 different cancer types [25]. The development of an advanced lymphoma cancer-specific index involved numerous steps prior to the actual study design and formal implementation of the present study. First, both patient and provider input regarding symptoms and concerns specific to lymphoma was collected through the use of semi-structured interviews, resulting in development of the FACT-Lym, a lymphoma cancer-specific QOL measure. Second, oncology physician and nurse experts at 17 National Comprehensive Cancer Network (NCCN) member institutions were interviewed regarding symptom priorities in lymphoma, utilizing items from the FACT-Lym. Physicians and nurses rated the five most important symptoms to address in treating patients with advanced lymphoma. The primary objective of the present study was to identify the highest priority symptoms in patients with stage III or IV lymphoma based upon a combination of patient and expert ratings in order to develop a modified index for treatment evaluation.

Eligible patients were at least 18 years old and diagnosed with stage III or IV lymphoma. Additional patient inclusion criteria included: prior experience with chemotherapy for at least two cycles (or 1 month with non-cyclical chemotherapy) and no other primary malignancy within the previous 5 years, with the exception of non-melanoma skin cancer; the ability to understand English and provide oral and signed informed consent for the study. Patients were recruited for symptom index development from several NCCN member institutions (Duke University Medical Center, Fred Hutchinson Cancer Center, Cancer Wellness Center, Cancer Support Center, NorthShore University Health System and the Robert H. Lurie Comprehensive Cancer Center) as well as through the Cancer Health Alliance of Metropolitan Chicago (CHAMC), an affiliation of community cancer support agencies in the Chicago metropolitan area. Furthermore, 10 hematologist–oncologists were recruited from NCCN institutions to differentiate whether priority symptoms were predominantly “disease-related” or “treatment-related,” and were eligible to participate if

they demonstrated at least 3 years' experience treating at least 100 patients with advanced lymphoma.

Study measures

Prior to study initiation, Institutional Review Board (IRB) approval was obtained from all institutions. After providing informed consent, patients' socio-demographic and clinical information was obtained from either patient self-report (CHAMC sites) or physician report (NCCN sites). First, open-ended interviews were administered to patients focused on what they perceived as the most significant symptoms or concerns that should be assessed, in order to evaluate the value of anticancer drug treatments for lymphoma. Patients were asked to generate up to 10 important symptoms/concerns and rank their importance on a scale of 0 ("not important") to 10 ("extremely important"). Also, patients completed checklists on which they selected 10 symptoms/concerns they perceived to be "the most important" and then up to five of the 10 top-ranked concerns with the greatest perceived importance when assessing the value of drug treatment for advanced lymphoma, from a list of symptoms associated with lymphoma that were derived from the FACT-Lym [26–28]. From the list of 10 symptoms selected as most important by patients, they were asked to choose five symptoms they considered to be the very most important symptoms/concerns to monitor when assessing the value of drug treatment for advanced lymphoma. Four versions of the checklist were administered to control for possible response bias due to item order effects.

Physicians completed the NCCN/FACT Advanced Lymphoma Cancer Physician Symptom/Concern Survey, a five-point scale that captured the degree to which oncology experts believed lymphoma cancer-related symptoms were disease- or treatment-related.

The FACT-Lym assessed patient-reported general quality of life related to cancer, as well as specific symptoms and concerns related to lymphoma. The 27 items assessing general quality of life related to cancer constitute the Functional Assessment of Cancer Therapy-General (FACT-G), which is a well-established multidimensional QOL instrument that contains four general subscales: Physical Well-Being (PWB), Social/Family Well-Being (SWB), Emotional Well-Being (EWB) and Functional Well-Being (FWB). The 15 items assessing symptoms and concerns specific to lymphoma were derived from a survey of physician and nurse experts at 17 NCCN member institutions that provided detailed information on the priority symptoms endorsed by oncology experts for nine tumor sites, including lymphoma. Consistent with the FACT measurement system, higher FACT-Lym scores indicate greater QOL.

The Eastern Cooperative Oncology Group (ECOG) assessment of performance status was used. Patients classified themselves into one of the following categories: (0) fully ambulatory without symptoms, (1) fully ambulatory with some symptoms, (2) requiring less than 50% of awake time to rest, (3) requiring more than 50% of awake time to rest and (4) bedridden.

Data analysis and selection of items

A multi-step measurement development process was utilized in order to enhance reliability of patient input and the clinical relevance of the index. Frequency distributions were

tabulated for all items selected by patients appearing in the lymphoma cancer symptom index. The probability of chance endorsement of one of the top five symptoms was calculated by dividing five (the number of “very most important symptoms”) by 39 (the total number of items in the lymphoma cancer-specific checklist) and multiplying this number by 50 (number of participants). All items that reached this a priori cut-off were included in the index, and those items endorsed at significantly greater rates than others were more closely reviewed to determine whether an additional symptom from that same domain deserved inclusion. Specific items from the Functional Assessment of Chronic Illness Therapy (FACIT) measurement system were utilized, for ease of use, validity and translation capabilities. Patient-generated symptoms/concerns were evaluated, and all responses were analyzed for content determined upon expert panel placement into thematic categories [29]. A stringent review of concepts not included in checklists was completed. If greater than 10% of patients endorsed a new symptom/concern not judged to be primarily treatment-related, or greater than 20% of patients if the new symptom/concern was judged to be primarily treatment-related, the symptom/concern was considered for item inclusion. Frequency distributions were evaluated for oncologist symptom attribution ratings. If more than 50% of physicians indicated that a symptom was exclusively/predominantly treatment-related, the item was categorized in the Treatment Side-Effects (TSE) subscale. Items predominantly related to disease or function/well-being were categorized in the Disease-Related Symptoms (DRS) or General Function and Well-Being (F/WB) subscales accordingly.

Cronbach’s coefficient alpha was calculated for the total symptom index and the subscales as a measure of internal consistency reliability. To demonstrate validity, the symptom index scores were correlated with the subscale scores of the FACT-Lym. FACT-Lym scores were first recalculated after removal of the items that were in common with the index to avoid over-inflation of the correlation coefficients. The 18-item NCCN-FLymSI is presented in the Supplementary Appendix to be found online at <http://informahealthcare.com/doi/abs/10.3109/10428194.2012.762977>.

Results

Study population characteristics

A total of 50 patients, 27 males and 23 females (mean age = 57.2 years, SD = 15.2) with advanced lymphoma, participated in the study. Table I presents the socio-demographic characteristics of all patients in the study. Patients were mostly Caucasian (87.8%), highly educated (86% more than high school), and 46% were generally unemployed (retired, on disability or leave of absence). Forty-four percent of patients were working part- or full-time. Regarding performance status, 38% of patients provided a self-reported ECOG status of 1 (fully ambulatory with some symptoms), which differed significantly from physicians’ reports of patient ECOG status (55% of patients were rated at an ECOG status of 1).

Patient ratings of symptom importance and measure development

The patient rankings of symptoms/concerns presented in the checklists are depicted in Table II. The top three were: fatigue, getting tired easily and being able to enjoy life. Thirteen

symptoms/concerns were endorsed as the top five most important symptoms with a probability greater than chance.

Reliability and validity of National Comprehensive Cancer Network FLymSI-18

Patient mean scores on the FACT-Lym and FlymSI are presented in Table III. The subset of FLymSI (six PWB, four FWB, one EWB and 15 Lymphoma Cancer-Specific [LYMS]) items administered as part of the FACT-Lym demonstrated good internal consistency reliability ($\alpha = 0.87$). The FLymSI score was highly correlated with the PWB, FWB and LYMS subscales (range $r_s = 0.70$ – 0.83 , $p < 0.0001$) and moderately correlated with the EWB and SWB subscales (range $r_s = 0.56$ – 0.60 , $p < 0.0001$; Table IV). As well, the DRS subscale was highly correlated with the PWB, FWB and LYMS subscales (range $r_s = 0.70$ – 0.83 , $p < 0.0001$), and moderately correlated with the SWB and EWB subscales (range $r_s = 0.50$ – 0.60 , $p < 0.0001$).

Discussion

Although significant advances in the clinical management of lymphoma have led to the availability of several cancer therapies for patients with advanced cancer, the specific self-reported symptoms and concerns of patients with lymphoma related to HRQOL while undergoing cancer treatment, such as in clinical trials, remain unknown. The primary objective of this study was to identify patients' most significant lymphoma-specific symptoms, compare these symptoms with those reported by oncologists, and utilize patient feedback from both sources to create a new tailored index. The FLymSI-18 was developed through the assessment of patients' priority symptoms utilizing open-ended interviews and the FACT-Lym, including patient- and oncology-endorsed symptoms and concerns significant to lymphoma HRQOL. Those symptoms most significant to patients were incorporated in the index. Unlike the FACT-Lym, which is a comprehensive multi-domain/ dimensional instrument assessment of symptoms and concerns of patients with lymphoma, the FLymSI-18 provides a tailored assessment of patients' individual symptomatology in lymphoma perceived as high priority by both patients and clinicians. The present study also measured internal consistency and relationships with outside validity indicators. The full index demonstrated good internal consistency and was associated with validity criteria, such as performance status and lymphoma-specific QOL measures. Therefore, quality of life ratings are representative of symptom burden and performance status changes. As well, the FlymSI-18 is designed and formatted using subscales identified by the following: Disease-Related Symptoms, Treatment Side-Effects and General Function and Well-Being for ease of use by clinician-researchers to identify categories of symptomaology.

The results revealed that the patients' top ranking three symptoms included: fatigue, getting tired easily and being able to enjoy life, which are consistent with prior research examining patient-reported quality of life in lymphoma [12–18]. As well, results further indicated strong support for the FLymSI-18's internal consistency reliability, content validity and convergent validity. Moreover, the FLymSI-18 demonstrated moderate to high correlations with the FACT-Lym and its subscales. In summary, physical-functional subscales held greater significance than the psychosocial subscale.

Several other considerations and limitations of the present study deserve further attention. First, the missing data for FLymSI-18 items and relatively small sample size limit the generalizability to study results. Also, the only clinical patient information collected was cancer diagnosis and performance status. Although the patient sample included only patients with stage III and IV lymphoma, future research may involve the actual collection of specific information including disease stage, lymphoma grade/histology, time since diagnosis and number of previous chemotherapy cycles and regimens. Next, the sample lacked diversity in terms of race/ethnicity, gender and socioeconomic status. This patient sample was mostly male, Caucasian (87.8%), highly educated (86% more than high school), and 46% were generally unemployed (retired, on disability or leave of absence). Thus, caution should be taken in the application of these results to more heterogeneous patient populations. Future study should include a diverse sample of patients with advanced lymphoma, utilizing longitudinal design to gain a representative sample of patients and assess patients' change in symptom level over time. Additionally, future studies should include testing the scale's attributes in indolent versus aggressive lymphoma and in upfront treatment compared to treatment at relapse. A confirmatory study should be undertaken prior to the implementation of study results as the basis of new clinical guidelines concerning QOL.

In accordance with FDA guidelines, the FLymSI-18 provides evidence of its reliability and validity as a brief assessment of the most important symptoms associated with treatment for advanced lymphoma for utilization in clinical trials in patients with advanced disease in the clinical-research environment.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

References

1. American Cancer Society. Cancer Facts and Figures 2011. Atlanta: American Cancer Society, Inc.; 2011.
2. Siegel R, Ward E, Brawley O, et al. Cancer statistics 2011. *CA Cancer J Clin.* 2011; 61:212–236. [PubMed: 21685461]
3. Hubbard SM, Longo DL. Treatment-related morbidity in patients with lymphoma. *Curr Opin Oncol.* 1991; 3:852–862. [PubMed: 1751579]
4. Razavi D, Delvaux N, Bredart A, et al. Professional rehabilitation of lymphoma patients: a study of psychosocial factors associated with return to work. *Support Care Cancer.* 1993; 1:276–278. [PubMed: 8156241]
5. Bilodeau BA, Fessele KL. Non-Hodgkin's lymphoma. *Semin Oncol Nurs.* 1998; 14:273–283. [PubMed: 9839340]
6. Fernsler J, Fanuele JS. Lymphomas: long-term sequelae and survivorship issues. *Semin Oncol Nurs.* 1998; 14:321–328. [PubMed: 9839345]
7. Lesko, L. Hematopoietic dyscrasias. In: Holland, HC., editor. *Psychooncology*. New York: Oxford University Press; 1998. p. 406-416.
8. Van Agthoven M, Vellenga E, Fibbe WE, et al. Cost analysis and quality of life assessment comparing patients undergoing autologous peripheral blood stem cell transplantation or autologous bone marrow transplantation for refractory of relapsed non-Hodgkin's lymphoma or Hodgkin's disease: a prospective randomized trial. *Eur J Cancer.* 2001; 37:1781–1789. [PubMed: 11549432]

9. Voliotis D, Diehl V. Challenges in treating hematologic malignancies. *Semin Oncol*. 2002; 29:30–39.
10. Webster K, Cella D. Quality of life in patients with low-grade non-Hodgkin's lymphoma. *Oncology*. 1998; 12:697–714. [PubMed: 9597680]
11. Foster T, Miller JD, Boye ME, et al. Economic burden of follicular non-Hodgkin's lymphoma. *Pharmacoeconomics*. 2009; 27:657–679. [PubMed: 19712009]
12. Pettengell R, Donnatti C, Hoskin P, et al. The impact of follicular lymphoma on health-related quality of life. *Ann Oncol*. 2008; 19:570–576. [PubMed: 18056649]
13. Smith SK, Zimmerman S, Williams CS, et al. Health status and quality of life among non-Hodgkins lymphoma survivors. *Cancer*. 2009; 115:3312–3323. [PubMed: 19452546]
14. Smith SK, Crespi CM, Petersen L, et al. The impact of cancer and quality of life for post-treatment non-Hodgkins lymphoma survivors. *Psychooncology*. 2010; 19:1259–1267. [PubMed: 20099255]
15. Crespi CM, Smith SK, Petersen L, et al. Measuring the impact of cancer: a comparison of non-Hodgkin lymphoma and breast cancer survivors. *J Cancer Surviv*. 2010; 4:45–58. [PubMed: 19967410]
16. Orelemans S, Mols F, Nijziel MR, et al. The impact of treatment, socio-demographic and clinical characteristics on health-related quality of life among Hodgkins's and non-Hodgkin's lymphoma survivors: a systemic review. *Ann Hematol*. 2011; 90:993–1004. [PubMed: 21670973]
17. Leak A, Mayer DK, Smith S. Quality of life domains among non-Hodgkin lymphoma survivors: an integrated literature review. *Leuk Lymphoma*. 2011; 52:972–985. [PubMed: 21534866]
18. Yost KJ, Thompson CA, Eton DT. The Functional Assessment of Cancer Therapy-General (FACT-G) is valid for monitoring quality of life in patients with non-Hodgkin lymphoma. *Leuk Lymphoma*. 2013; 54:290–297. [PubMed: 22799432]
19. Guidance for industry: Patient-reported outcome measures: use in medical product development to support labeling claims. Rockville, MD: US Department of Health and Human Services FDA Center for Drug Evaluation and Research; 2009.
20. Quality of life ad claims should be specific, FDA-sponsored physician focus groups say: ad division direction cautions against QOL “claim expansiveness”. *FDC Rep*. 1994; 56:8–9.
21. Hlubocky FJ, Webster K, Cashy J, et al. The development and validation of a measure of health-related quality of life for non-hodgkin's lymphoma: the Functional Assessment of Cancer Therapy – Lymphoma (FACT-Lym). *Lymphoma Submitted*. 2012
22. Leidy NK, Revicki DA, Geneste B. Recommendations for evaluating the validity of quality of life claims for labeling and promotion. *Value Health*. 1999; 2:113–126. [PubMed: 16674343]
23. Williams G, Pazdur R, Temple R. Assessing tumor-related signs and symptoms to support cancer drug approval. *J Biopharm Stat*. 2004; 14:5–21. [PubMed: 15027497]
24. Cleeland CS. Symptom burden; multiple symptoms and their impact as patient-reported outcomes. *J Natl Cancer Inst Monogr*. 2007; 37:16–21.
25. Cella D, Rosenbloom SK, Beaumont JL, et al. Development and validation of eleven symptom indexes to evaluate response to chemotherapy for advanced cancer. *J Natl Compr Cancer Netw*. 2011; 9:13–23.
26. Webster K, Odom L, Peterman A, et al. The Functional Assessment of Chronic Illness Therapy (FACIT) measurement system: validation of version 4 of the core questionnaire. *Qual Life Res*. 1999; 8:604.
27. Webster K, Cella D, Yost K. The Functional Assessment of Chronic Illness Therapy (FACIT) measurement system: properties, applications, and interpretation. *Health Qual Life Outcomes*. 2003; 1:79. [PubMed: 14678568]
28. Webster K, Cashy J, Cella D, et al. Measuring quality of life (QOL) in patients with non-Hodgkin's Lymphoma (NHL): the Functional Assessment of Cancer Therapy-Lymphoma (FACT-Lym). *Qual Life Res*. 2005; 14:1650.
29. Ryan, G., Bernard, HR. Data management and analysis methods. In: Denzin, NK., Lincoln, YS., editors. *Handbook of qualitative research*. 2. Thousand Oaks, CA: Sage Publications; 2000.

Table ISociodemographic characteristics of patients ($n = 50$).

	<i>n</i>	%
Gender		
Male	27	54.0
Female	23	46.0
Race/ethnicity		
Caucasian	43	87.8
African-American	5	10.2
Asian	1	2.0
Highest education		
Less than high school	1	2.0
High school graduate or GED	6	12.0
Vocational college or some college	14	28.0
College degree	14	28.0
Professional or graduate degree	15	30.0
Current occupational status		
Homemaker	5	10.0
Retired	16	32.0
On disability	6	12.0
On leave of absence	1	2.0
Full-time employed	17	34.0
Part-time employed	5	10.0
ECOG performance status (physician rating)		
0	13	32.5
1	22	55.0
2	4	10.0
3	1	2.5
ECOG performance status (patient rating)		
0	21	42.0
1	19	38.0
2	9	18.0
3	1	2.0

GED, General Educational Development; ECOG, Eastern Cooperative Oncology Group.

Table II

Rankings of top five very most important symptoms/concerns by patients.

Symptom/concern	Overall rank	% Endorsed top five
Lack of energy (fatigue)	1	38
Getting tired easily	2	34
Being able to enjoy life	3	28
Worry about getting infections	4	26
Trouble concentrating	5	22
Lumps or swelling in certain parts of my body (e.g. neck, armpits, groin)	6	20
Nausea	6	20
Worry that my condition will get worse	6	20
Being able to support myself or my family due to my illness	9	18
Feeling uncertain about my future health	9	18
Because of my illness, having difficulty planning for the future	11	16
Being content with the quality of my life right now	11	16
Emotional ups and downs	13	16

Table IIIDescriptive statistics for FLymSI-18 and FACT-G scale scores ($n = 50$).

Measure/subscale	Total mean score (SD)	Possible range
FACT-Lym	126.8 (23.2)	0–165
PWB	21.7 (5.5)	0–28
SWB	22.9 (4.3)	0–28
EWB	18.4 (3.8)	0–24
FWB	18.8 (6.5)	0–28
FACT-G	81.8 (16.0)	0–108
LYMS	45 (8.5)	0–60
TOI	85.5 (18.5)	0–115
FlymSI	43.4 (10.6)	0–62
FlymSI-DRS	34.6 (8.9)	0–52
FlymSI-TSE	8.9 (2.4)	0–12
FlymSI-F/WB	5.2 (2.1)	0–8

FLymSI-18, National Comprehensive Cancer Network-Functional Assessment of Cancer Therapy – Lymphoma Symptom Index-18; FACT-G, Functional Assessment of Cancer Therapy-General (Version 4); FACT-Lym, Functional Assessment of Cancer Therapy – Lymphoma; LYMS, Lymphoma Cancer-Specific subscale of the FACT-Lym; PWB, Physical Well-Being subscale of the FACT-G; SWB, Social Well-Being subscale of the FACT-G; EWB, Emotional Well-Being subscale of the FACT-G; FWB, Functional Well-Being subscale of the FACT-G; TOI, Trial Outcome Index: sum of PWB, FWB and LYMS scores; FlymSI-DRS, Disease-Related Symptom subscale; FlymSI-TSE, Treatment Side-Effect subscale; FlymSI-F/WB, General Function and Well-Being subscale.

Table IV

Spearman correlation coefficients for FLymSI-18 and FACT-Lym scale scores, adjusted for overlapping items where required ($n = 50$).

Measure/scale	PWB	SWB	EWB	FWB	LYMS
FLymSI-18	0.75	0.60	0.56	0.70	0.83
	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
FLymSI-DRS	0.70	0.60	0.50	0.72	0.83
	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001
FLymSI-TSE	0.68	0.21	0.33	0.37	0.67
	< 0.0001	0.1533	0.0184	0.0081	< 0.0001
FLymSI-F/WB *	0.67	0.62	0.50	NA	0.62
	< 0.0001	< 0.0001	< 0.0002		< 0.0001

* The two FLymSI-F/WB items are a subset of the FWB, so correlations after removal of overlapping items not calculated.

FLymSI-18, National Comprehensive Cancer Network-Functional Assessment of Cancer Therapy – Lymphoma Symptom Index-18; FACT-Lym, Functional Assessment of Cancer Therapy – Lymphoma; LYMS, Lymphoma Cancer-Specific subscale of the FACT-Lym; PWB, Physical Well-Being subscale of the FACT-G; SWB, Social Well-Being subscale of the FACT-G; EWB, Emotional Well-Being subscale of the FACT-G; FWB, Functional Well-Being subscale of the FACT-G; TOI, Trial Outcome Index: sum of PWB, FWB and LYMS scores; FLymSI-DRS, Disease-Related Symptom subscale; FLymSI-TSE, Treatment Side-Effect subscale; FLymSI-F/WB, General Function and Well-Being subscale; NA, not applicable.