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Symptom prevalence, burden and correlates among people living with HIV in Vietnam: a two-centre self-report study

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ABSTRACT

Physical and psychological symptoms among people living with HIV (PLWH) adversely affect quality of life and treatment adherence. Study objectives were: (i) to determine validity and reliability of a Vietnamese translation of the Memorial Symptom Assessment Scale–Short Form (MSAS-SF) among PLWH in Vietnam; (ii) to measure prevalence and burden of physical and psychological symptoms using the MSAS-SF including the Global Distress Index (GDI), Physical Distress subscale (PHYS), and Psychological Distress subscale (PSY); (iii) to identify symptom burden risk factors. We recruited 567 patients. Cronbach's alpha scores were: total MSAS-SF 0.91, GDI 0.83, PHYS 0.85, PSYCH 0.81. The scale showed good discriminant validity (low vs high function) ($p < 0.001$). The mean number of symptoms was 7.66, and the most prevalent were “worrying” (41.6%), “lack of energy” (40.6%), “feeling irritable” (40.4%), and “feeling sad” (39.2%). Monthly income below the poverty line was independently associated with increased: GDI, PHYS, and PSY and a greater number of symptoms. The Vietnamese version of the MSAS-SF is valid to measure symptom prevalence and burden in HIV-positive populations. Here is a high symptom prevalence and burden among PLWH in Vietnam, especially those living in poverty, and a great need for palliative care integrated with HIV treatment.

KEYWORDS

HIV; symptoms; pain; Vietnam

Introduction

Physical and psychological symptoms have been shown to be highly prevalent among people living with HIV (PLWH) (Harding et al., 2010b; Lowther et al., 2014; Abboah-Offei et al., 2019; Bristowe et al., 2019). High symptom burden is associated with poor ART adherence, sexual risk taking, treatment switching, poorer quality of life, viral rebound, suicidal ideation, and poor clinical outcomes (Harding et al., 2010; Harding, Clucas, Lampe, Date, et al., 2012; Harding, Clucas, Lampe, Norwood, et al., 2012; Lampe et al., 2010; Sherr et al., 2007; Sherr, Lampe, Fisher, et al., 2008). Yet data suggest that routine HIV clinical care does not address physical and psychological concerns of PLWH (Harding & Molloy, 2008).

In Vietnam, high symptom burden among PLWH was found in an informal study in 2006 (Ministry of Health of Vietnam, 2006). But there is no scientific

evidence of patient-reported outcomes needed to inform HIV/AIDS clinical policy and care. We aimed: (i) to determine the psychometric properties of a commonly used measure of prevalence and burden of physical and psychological symptoms; (ii) to measure symptom prevalence and burden; (iii) to identify associations between symptom burden and socio-demographic and clinical factors.

Methods

We recruited a convenience sample of inpatients and outpatients at the national HIV/AIDS treatment centres for northern and southern Vietnam. Inclusion criteria were: 18 years or older, a serological diagnosis of HIV infection of which the patient was aware, and patient capacity to provide consent and self-report. Patients who lacked this capacity or were receiving terminal

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Table 1. Sample characteristics (*N* = 567).

Variables	
Age (years) Median (IQR)	36 (32-41)
Gender: (female)	n (%) 207 (36.6)
Area of residence	
Rural area	191 (33.7)
Urban area	376 (66.3)
Highest education level	
No education	5 (0.9)
Primary school	63 (11.1)
Secondary school	195 (34.4)
High school	206 (36.3)
University / College	98 (16.2)
Marital status	
Single	143 (25.2)
Married	313 (55.2)
Living with a partner	11 (1.9)
Separated	9 (1.6)
Divorced	33 (5.8)
Widowed	58 (10.2)
Household size (person)	
Median (IQR)	4 (3-4)
Caring for children	364 (64.2)
Numbers of children as dependants (person)	
Median (IQR)	1 (1-2)
Average income per month (n,%)	
Less than 1.5 million VND	174 (30.7)
1.5 to 2.5 million VND	101 (17.8)
More than 2.5 to 3.5 million VND	89 (15.7)
More than 3.5 million VND	180 (31.7)
In paid employment	242 (42.7)
Place of care (n,%)	
• Inpatient	103 (18.1)
• Outpatient	392 (69.1)
• Home	73 (12.8)
In stable relationship with partner	337 (59.4)
Functional status (ECOG)	
0	378 (66.7)
1	137 (24.2)
2	31 (5.5)
3	18 (3.2)
4	1 (0.2)
HIV WHO clinical stage	
Stage 1	381 (67.2)
Stage 2	49 (8.6)
Stage 3	53 (9.3)
Stage 4	56 (9.9)
CD4 count (cells) mm³ Median (IQR)	349 (200 - 506)
Prior AIDS diagnosis	193 (34)
Receiving ART	539 (95.1)
Disclosure of HIV status to another	471 (83.1)
Unprotected sex with a partner of unknown HIV status in previous 3 months	33 (5.8)
IV drug injection the last 3 months	23 (4.1)
Sharing needles – among participants using IV drug for the last 3 months	10 (1.4)
Receiving methadone maintenance treatment	35 (6.2)

care were excluded. Patients were approached consecutively, and written informed consent was obtained prior to data collection. The study was approved by Vietnam's Ministry of Health and by the Institutional Review Board of Partners Healthcare System in Boston, USA.

Demographic, social and clinical data were obtained via face-to-face interview. Questions were read aloud by the investigators and participants gave verbal responses which were recorded by the study researcher. CD4 count, current treatment status and clinical stage were

obtained from the treating clinician. We used the Memorial Symptom Assessment Scale–Short Form (MSAS-SF), a measure of the seven-day, self-reported prevalence and burden of 28 physical and four psychological symptoms, that has been validated and used frequently with PLWH in the USA (Farrant et al., 2012; Harding et al., 2006; Harding, Selman, Agupio, Dinat, et al., 2012; McGowan et al., 2014; Moens et al., 2015; Namisango et al., 2012; Portenoy et al., 1994; Vogl et al., 1999; Wakeham et al., 2017). For physical symptoms, burden is rated on a 5-point (0–4) Likert scale (not at all, a little bit, somewhat, quite a bit, very much). The burden of psychological symptoms is measured as their frequency and is scored as rarely (1), occasionally (2), frequently (3), and almost constantly (4).

The MSAS-SF has four subscales (Portenoy et al., 1994; Vogl et al., 1999). The Global Distress Index (GDI) is the average of the frequency of four psychological symptoms and the distress associated with 6 prevalent physical symptoms. The Physical Symptom Subscale score (PHYS) is the average of the frequency, severity and distress associated with 12 prevalent physical symptoms. The Psychological Symptom Subscale score (PSYCH) is the average of the frequency, severity and distress associated with six prevalent psychological symptoms. The MSAS-SF was independently translated from English into Vietnamese by two Vietnamese bilingual medical doctors working independently, and a final Vietnamese version was prepared by agreement between translators. The Vietnamese version was pilot tested by cognitive interview among 10 PLWH. Physical function was measured using the ECOG scored from 0 (fully active) to 5 (dead) (Oken et al., 1982).

Cronbach's coefficient alpha was used to assess internal consistency for each subscale (GDI, PHYS, PSYCH) and for the entire scale. Construct (discriminant) validity was assessed using known groups comparison, physical function measured with ECOG scores 0-1 v 2-4, by Mann-Whitney U test. For each symptom, we calculated descriptive statistics of prevalence and burden. Scores for the three subscales (GDI, PHYS, PSYCH), total MSAS-SF, and number of symptoms, were calculated. Symptom prevalence was reported as percentages. Symptoms were ranked in two orders: from most to least prevalent and from most to least clinically burdensome. Psychological symptoms that were identified as "frequent" or "almost constant" present were considered "clinically burdensome".

Multivariable linear regression was applied to determine the association between burden indices (i.e. the numeric dependent variable in each model) and demographic and clinical factors (independent variables). Independent variables associated with the dependent variable at the 25% level were retained (Altman, 1991)

Table 2. Physical symptom prevalence and burden using MSAS-SF $N = 567$.

Rank	Physical symptoms	Prevalence $N = 567$ n (%)	Not at all n (%)	Level of Distress (Burdensomeness)			
				A little bit n (%)	Somewhat n (%)	Quite a bit n (%)	Very much n (%)
1	Lack of energy	229 (40.4)	20 (3.5)	86 (15.2)	55 (9.7)	47 (8.3)	21 (3.7)
2	Drowsy	212 (37.4)	32 (5.6)	87 (15.3)	45 (7.9)	36 (3.6)	13 (2.3)
3	Lack of sleep	200 (35.3)	17 (3)	63 (11.1)	47 (8.3)	54 (9.5)	19 (3.4)
4	Numbness / Tingling	198 (35)	27 (4.8)	91 (16)	36 (6.3)	38 (6.7)	7 (1.2)
5	Dry mouth	178 (31.4)	29 (5.1)	91 (16)	27 (4.8)	25 (4.4)	6 (1.1)
6	Cough	168 (29.6)	25 (4.4)	76 (13.4)	33 (5.8)	27 (4.8)	7 (1.2)
7	Hair loss	167 (29.5)	36 (6.3)	83 (14.6)	15 (2.6)	28 (4.9)	6 (1.1)
8	Dizziness	166 (29.2)	17 (3)	69 (12.2)	42 (7.4)	27 (4.8)	10 (1.8)
9	Lack of appetite	162 (28.6)	23 (4.1)	55 (9.7)	29 (5.1)	36 (6.3)	19 (3.4)
10	Lack of concentration	151 (26.6)	22 (3.9)	54 (9.5)	29 (5.1)	38 (6.7)	8 (1.4)
11	Weight loss	150 (26.5)	25 (4.4)	62 (10.9)	27 (4.8)	27 (4.8)	9 (1.6)
12	Pain	143 (25.2)	11 (1.9)	49 (8.6)	28 (4.9)	41 (7.2)	15 (2.6)
13	Change in skin	134 (23.6)	16 (2.8)	50 (8.8)	27 (4.8)	34 (6)	7 (1.2)
14	Sweating	125 (22.1)	21 (3.7)	59 (10.4)	22 (3.9)	21 (3.7)	2 (0.4)
15	Itching	115 (20.2)	3 (0.5)	52 (9.2)	27 (4.8)	26 (4.6)	6 (1.1)
16	Change in food taste	104 (18.4)	11 (1.9)	43 (7.6)	23 (4.1)	21 (3.7)	6 (1.1)
17	Nausea	101 (17.8)	6 (1.1)	51 (9)	24 (4.2)	13 (2.3)	7 (1.2)
18	I don't look like myself	99 (17.5)	14 (2.5)	34 (6)	17 (3)	27 (4.8)	7 (1.2)
19	Feeling bloated	89 (15.7)	5 (0.9)	33 (5.8)	29 (5.1)	17 (3)	5 (0.9)
20	Diarrhea	86 (15.2)	9 (1.6)	38 (6.7)	18 (3.2)	13 (2.3)	8 (1.4)
21	Sexual problems	81 (14.3)	18 (3.2)	35 (6.2)	19 (3.4)	6 (1.1)	2 (0.4)
22	Constipation	79 (13.9)	10 (1.8)	37 (6.5)	12 (2.1)	16 (2.8)	4 (0.7)
23	Dyspnea	78 (13.7)	0 (0)	48 (8.5)	14 (2.5)	13 (2.3)	2 (0.4)
24	Urination symptoms	62 (11)	11 (1.9)	22 (3.9)	15 (2.6)	11 (1.9)	4 (0.7)
25	Vomiting	60 (10.5)	5 (0.9)	26 (4.6)	9 (1.6)	14 (2.5)	5 (0.9)
26	Mouth sore	57 (10)	3 (0.5)	23 (4.1)	12 (2.1)	15 (2.6)	4 (0.7)
27	Difficulty swallowing	54 (9.5)	2 (0.4)	22 (3.9)	14 (2.5)	14 (2.5)	1 (0.2)
28	Swelling arms/legs	32 (5.6)	3 (0.5)	12 (2.1)	8 (1.4)	6 (1.1)	2 (0.5)

Rank	Psychological symptoms	Prevalence	Frequency			
			Rarely n (%)	Occasionally n (%)	Frequently n (%)	Almost constant n (%)
1	Worrying	235 (41.4)	32 (5.6)	115 (20.3)	76 (13.4)	12 (2.1)
2	Feeling nervous	229 (40.3)	36 (6.3)	142 (25)	42 (7.4)	9 (1.6)
3	Feeling irritable	172 (30.3)	27 (4.8)	104 (18.3)	36 (6.3)	5 (0.9)
4	Feeling sad	222 (39.1)	36 (6.3)	110 (19.4)	65 (11.5)	11 (1.9)

and entered stepwise into the multivariable linear model. We report the 95% confidence interval (95% CI) for the exponential beta coefficient.

Results

We recruited $N = 567$ participants, most of whom were male (63.4%), from urban areas (66.3%, and had completed high school (52.5%) (Table 1). For 30.7%, average monthly income was below Vietnam's poverty line (Vietnam, 2015). The majority had Stage 1 HIV infection and normal performance status (67.2% and 66.7% respectively), and 95.1% were on ART.

Cronbach's alpha coefficients for the three subscales (PHYS, PSYCH, GDI) and for the total MSAS-SF scale were 0.85; 0.81; 0.83 and 0.90, respectively. Construct

validity was demonstrated by significantly higher burden and greater number of symptoms among those with poorer physical function for total MSAS-SF score (Mann Whitney $U = 3582.5$, $p < 0.001$), GDI subscale (5052.5, $p < 0.001$), PSYCH subscale (3463.5, $p < 0.001$) and total number of symptoms (4067.5, $p < 0.001$).

The seven-day symptom prevalence and associated burden are reported in Table 2. The most prevalent symptoms were worrying (41.5%), lack of energy (40.4%), feeling nervous (40.3%), and feeling sad (39.1%). All four psychological symptoms were among the 10 most prevalent symptoms.

The most burdensome physical symptoms were: lack of sleep (12.9%), lack of energy (12.0%), pain (9.8%), and lack of appetite (9.7). Among psychological symptoms, "worrying" and "feeling sad" were reported as either "frequent" or "almost constant" by 15.5%, and 13.4% respectively.

The median number of reported symptoms was 6 (IQR = 3 - 12), and 25% reported more than 12 concurrent symptoms in the previous seven days (Table 3). The burden of psychological symptoms was higher than the burden of physical symptoms.

Table 3. MSAS-SF scores of HIV/AIDS patients ($N = 567$).

	Mean	Median	SD	IQR
Total MSAS score	0.51	0.33	0.50	0.11; 0.78
Physical distress subscale	0.53	0.27	0.61	0.07; 0.8
Psychological distress subscale	0.79	0.50	0.83	0.83; 1.33
GDI	0.71	0.50	0.69	0.16; 1.23
Number of symptoms	7.66	6	6.21	3; 12

Table 4. Associations of factors with symptoms in HIV/AIDS patients: univariate linear regression, $N = 567$.

Variables		Model 1: GDI	Model 2: PHYS	Model 3: PSYCH	Model 4: No Sx
Age	B	-0.005	2.153	21.236	0.979
	p	0.616	0.042 *	0.999	0.159 *
Gender	B	-0.101	0.143	-0.111	0.024
	p	0.566	0.416	0.525	0.893
Living location	B	0.49	0.118	0.504	0.168
	p	0.006 *	0.51	0.005 *	0.348
Education	B	-0.178	-0.266	-0.128	-0.106
	p	0.293	0.119 *	0.449	0.53
Having paid job	B	-0.023	-0.168	0.108	-0.259
	p	0.893	0.328	0.528	0.129 *
Average income	B	0.638	0.488	0.628	0.703
	p	0.001 *	0.009 *	0.001 *	0.0001 *
Marital status	B	0.163	0.212	0.091	0.19
	p	0.338	0.214 *	0.593	0.264
Having children	B	0.011	0.023	-0.099	0.063
	p	0.95	0.897	0.577	0.723
Place of care	B	-1.608	-1.965	-0.837	-1.757
	p	0.0001 *	0.0001 *	0.0001 *	0.0001 *
ECOG performance	B	-2.346	-2.641	-1.367	-2.786
	p	0.0001 *	0.0001 *	0.0001 *	0.0001 *
Prior diagnosis of AIDS	B	0.665	1.063	0.363	0.953
	p	0.0001 *	0.0001 *	0.044 *	0.0001 *
WHO clinical stage	B	-1.147	-1.497	-0.789	-1.552
	p	0.0001 *	0.0001 *	0.0001 *	0.0001 *
ART	B	-2.184	-1.639	-0.773	-1.452
	p	0.0001 *	0.001 *	0.062 *	0.004 *
CD4 count	B	0.523	0.825	0.285	0.697
	p	0.003 *	0.0001 *	0.105 *	0.0001 *
Drug injection in the last 3 months	B	0.849	1.382	1.071	1.196
	p	0.066 *	0.007 *	0.026 *	0.02 *
Disclosure HIV status	B	0.371	0.401	0.269	0.226
	p	0.101 *	0.078 *	0.232 *	0.024 *

*: p values < 0.25, included in regression models.

B: regression coefficient.

p: significance value.

Univariable analysis is reported in Table 4. The multivariable model (Table 5) revealed that living below the poverty line was associated with higher (worse) GDI subscale ($p = 0.004$), higher PHYS subscale ($p = 0.001$), higher PSY subscale ($p = 0.04$), and greater total number of symptoms ($p = 0.001$). Living in a rural area was associated with higher PSY score ($p = 0.046$).

Being recruited from an outpatient setting (compared to inpatients) was associated with a lower PHYS score ($p = 0.038$).

Better physical function was associated with lower number of symptoms ($p = 0.047$).

Having a diagnosis of AIDS was associated with higher (worse) PHYS score ($p = 0.022$), but higher (worse) WHO HIV stage was associated with fewer total symptoms ($p = 0.029$).

Discussion

This study demonstrates the validity and reliability of a Vietnamese translation of the MSAS-SF among PLWH in Vietnam and measures symptom prevalence, burden,

and associated factors in this population. PLWH in Vietnam, especially the poorest, suffer from multiple highly prevalent and burdensome symptoms. Consistent with existing data on prevalence of psychological disorders among PLWH in Vietnam (Thai et al., 2017), we found that all four psychological symptoms on the MSAS-SF were among the 10 most prevalent symptoms overall. This finding is particularly important given that PLWH in Vietnam have limited access to emotional support and mental health services (Dao et al., 2013) recommended by WHO. While the mean PSYCH subscale score in our study was lower than in other developing countries (Harding, Selman, Agupio, Dinat, et al., 2012; Namisango et al., 2014; Namisango et al., 2015; Wakeham et al., 2010), our sample had less advanced disease compared to other studies.

Social factors were independently associated with symptom burden. Patients living in rural areas had greater psychological distress, and those living in poverty had higher general distress, physical distress, psychological distress and a higher number of symptoms. This may be due in part to less access to healthcare (Bertozzi & Gutierrez, 2013; Piot et al., 2001). The lack of association in our study between receiving ART and symptom burden is consistent with other studies and indicates that palliative care should accompany, and be integrated with, ART (Harding et al., 2010a; Harding et al., 2006; Harding, Selman, Agupio, Dinat, et al., 2012). Such integration is especially important in light of evidence that high symptom burden compromises patients' ability to adhere to treatment (Sherr, Lampe, Norwood, et al., 2008).

Our study has several limitations. We were not able to identify causal relationships between predictors and symptom prevalence or burden. Also, while the construct validity of the Vietnamese version of MSAS-SF was confirmed, its face validity was not assessed with cognitive interviews of Vietnamese patients, and we did not conduct back translation of the instrument. In addition, we recruited a convenience rather than random sample of subjects, and only a small minority were not on ART.

In conclusion, we found a high burden of physical and psychological symptoms among PLWH, most of whom had stage 1 HIV disease, were fully functional, and on ART. In light of the evidence that high symptom burden is associated with poor clinical outcomes, care for PLWH that does not integrate symptom control and palliative care as an essential component is medically and morally inadequate (Lowther et al., 2015; Lowther, Harding, Simms, Ahmed, et al., 2018; Lowther, Harding, Simms, Gikaara, et al., 2018; Nkhoma et al., 2018).

Table 5. Associations of factors with symptom burden, multiple linear regression analysis *N* = 567.

	Model 1: GDI <i>N</i> 1 = 488			Model 2: PHYS <i>N</i> = 478			Model 3: PSYCH <i>N</i> = 493			Model 4: Number of Symptom <i>N</i> = 482		
	B	p	OR (CI 95%)	B	p	OR (CI 95%)	B	P	OR (CI 95%)	B	p	OR (CI 95%)
Age (Older adult (> = 60) = reference group)	N/A	N/A	N/A	1.897	0.08	6.668 (0.798; 7.33)	N/A	N/A	N/A	0.723	0.325	2.061 (0.488; 8.712)
Living location (Urban = reference group)	0.353	0.091	1.424 (0.945; 2.144)	N/A	N/A	N/A	0.404	0.046 *	1.498 (1.006; 2.231)	N/A	N/A	N/A
Education (High school or higher education = reference group)	N/A	N/A	N/A	-0.478	0.027 *	0.620 (0.405; 0.948)	N/A	N/A	N/A	N/A	N/A	N/A
Having paid job (No = reference group)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.018	0.936	0.982 (0.634; 1.523)
Average income per month (Not below poverty line = reference group)	0.613	0.004 **	1.847 (1.222; 2.791)	0.73	0.001 ***	2.075 (1.332; 3.235)	0.588	0.004 **	1.8 (1.204; 2.691)	0.773	0.001 ***	2.167 (1.354; 3.467)
Relationship status (Having partner = reference group)	N/A	N/A	N/A	0.128	0.535	1.137 (0.758; 1.704)	N/A	N/A	N/A	N/A	N/A	N/A
Place of care (Inpatient = reference group)	-0.563	0.172	0.569 (0.254; 1.278)	-0.924	0.038 *	0.397 (0.166; 0.951)	-0.251	0.533	0.778 (0.353; 1.715)	-0.719	0.117	0.487 (0.199; 1.197)
ECOG performance group (Low function = reference group)	-1.002	0.117	0.367 (0.105; 1.287)	-1.446	0.079	0.236 (0.047; 1.182)	-0.97	0.089	0.379 (0.124; 1.158)	-2.158	0.047 *	0.116 (0.014; 0.969)
Prior diagnosis of AIDS (No = reference group)	0.315	0.191	1.37 (0.855; 2.196)	0.566	0.022 *	1.762 (1.085; 2.862)	-0.19	0.936	0.981 (0.615; 1.566)	0.357	0.147	1.43 (0.882; 2.318)
WHO clinical stage (Stage 3-4 = reference group)	-0.445	0.164	0.641 (0.342; 1.2)	-0.638	0.059	0.528 (0.272; 1.025)	-0.332	0.298	0.718 (0.384; 1.34)	-0.762	0.029 *	0.467 (0.235; 0.926)
ART (No = reference group)	-0.834	0.242	0.434 (0.107; 1.758)	-0.46	0.519	0.631 (0.156; 2.56)	-0.084	0.893	0.919 (0.27; 3.123)	0.399	0.573	1.49 (0.372; 5.974)
CD4 count (350 or more = reference group)	0.128	0.546	1.137 (0.75; 1.724)	0.263	0.231	1.301 (0.845; 2.003)	0.045	0.829	1.046 (0.696; 1.573)	0.251	0.242	1.285 (0.844; 1.957)
Drug injection in the last 3 months (No = reference group)	0.055	0.922	1.057 (0.351; 3.184)	0.318	0.602	1.374 (0.416; 4.538)	0.816	0.18	2.262 (0.687; 7.45)	0.342	0.592	1.407 (0.404; 4.902)
Disclosure HIV status (No = reference group)	0.403	0.134	1.497 (0.883; 2.539)	0.159	0.579	1.173 (0.668; 2.059)	0.21	0.411	1.234 (0.747; 2.037)	0.453	0.094	1.573 (0.925; 2.674)
Nagelkerke R square	0.128			0.218			0.085			0.189		

*statistically significant at 5% level.

**statistically significant at 1% level.

***statistically significant at 0.1% level.

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Data availability statement

Data are available from the corresponding author on reasonable request.

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