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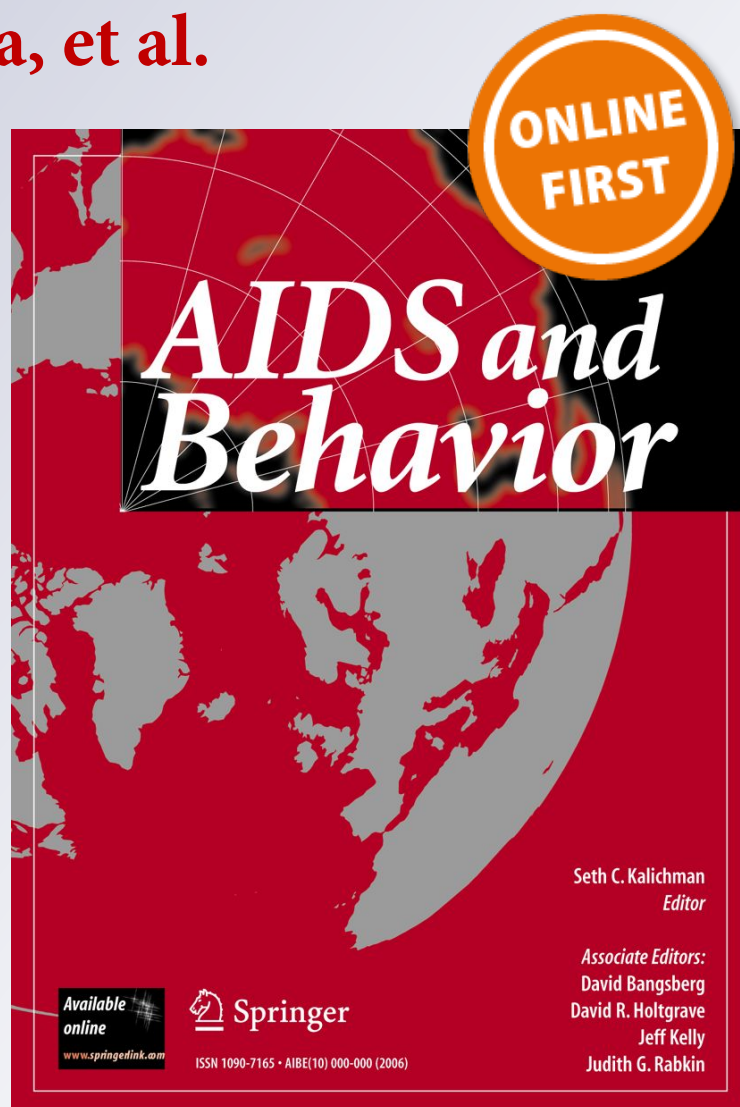
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Development of a New Instrument for the Assessment of Psychological Predictors of Well-being and Quality of Life in People with HIV or AIDS

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Abstract This study aims to develop an instrument for the assessment of psychological predictors of well-being and quality of life (QoL) in people living with HIV. A four-step procedure was followed to achieve this objective. A literature review, focus group in different regions of Spain and content analysis generated a preliminary pool of 96 items. Interjudgement ratings over the items and a cognitive debriefing interview were performed to delete or review items (one omitted and 15 reviewed). The psychometric properties of the instrument were assessed in a sample of 84 HIV+. Pilot testing allowed a new wave of

deputation process by empirical criteria (30 items omitted). A final pool of 63 items covering 23 facets (α from 0.53 to 0.95) of psychological predictors remained. Exploratory factorial analysis (GLS) assessing the underlying structure of the questionnaire showed a six-factor model explaining 56.5 of variance. Empirical exploratory structure revealed evidence of goodness of fit ($\chi^2 = 113.110$, $gl = 130$, $p > 0.05$; RMSEA = 0.017; RMSEA IC90 % 0.000–0.057). This study presents the first instrument able to screen key psychological variables expected to be related to adjustment, well-being and QoL in people with HIV.

The study was conducted on behalf of the Spanish Group for the Quality of Life Improvement in HIV or AIDS.

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Resumen Este estudio tuvo como objetivo desarrollar un instrumento para la evaluación de los predictores psicológicos del bienestar y la calidad de vida de las personas que viven con el VIH. Cuatro pasos se siguieron para lograr este objetivo. Revisión de la literatura, grupos de discusión en diferentes regiones de España y análisis cualitativo de contenido del material transcrito de los grupos, permitieron generar un conjunto preliminar de 96 ítems. Los ítems fueron sometidos a una valoración interjueces y, posteriormente, a la valoración de personas con VIH, para revisar o eliminar aquellos ítems menos relevantes o que no se entendían bien (uno eliminado y 15 revisados). Las propiedades psicométricas del instrumento fueron entonces valoradas en una muestra de 84 VIH+. El estudio piloto permitió una nueva oleada de depuración de ítems utilizando criterios empíricos (30 ítems fueron eliminados). Un grupo final de 63 ítems distribuidos en 23 facetas (α 0.53 a 0.95) de predictores psicológicos se mantuvieron. El análisis factorial exploratorio identificó la estructura subyacente del cuestionario con un modelo de seis factores que explican 56.5 de la varianza. La estructura exploratoria empírica mostró evidencias de bondad del ajuste ($\chi^2 = 113.110$, $gl = 130$, $p > 0.05$; RMSEA = 0,017; RMSEA IC90 % 0,000–0,057). Este estudio presenta el primer

instrumento capaz de valorar variables psicológicas clave en la predicción de la adaptación, bienestar y la calidad de vida en personas con VIH.

Keywords Quality of life · Well-being · HIV · Psychological predictors

Palabras-Clave Calidad de vida · Bienestar · VIH · Predictores psicológicos

Introduction

Nowadays, human immunodeficiency virus (HIV) infection shows a different scenario compared with previous decades. Treatments have increased disease-free interval and survival rates, helping to maintain and improve health markers with a better profile of tolerability. The challenges faced by people living with HIV have also changed. These may include treatment burden and lifelong therapy, visible side effects, uncertainty related to employment and economical status, and stigma.

In this context, awareness of the importance of including psychological measurements in clinical assessments of people with HIV, in order to capture the functional impairments regarding physical, emotional, and social domains, has increased in the last years. In fact, improving wellbeing and quality of life is considered a central issue in the care and support of people living with HIV or AIDS [1].

Thus, evidence has shown that psychosocial and contextual factors play a role in the prediction of HIV disease progression [2–5]. A similar pattern has been described for the quality of life of people living with HIV or those diagnosed as acquired immunodeficiency syndrome (AIDS) [6]. However, scientific knowledge is still at an early stage as regards those psychological determinants or predictors which provide clues to individual differences across HIV progression and perceived well-being and quality of life. Therefore, there is no specific consensus on measures to tap these psychological constructs to assess psychological predictors. Moreover, there is no single instrument that assesses this wide range of constructs. Indeed, a recent literature review [7] revealed a lack of existing HIV-specific health-status instruments that capture the experience of disability among adults living with HIV.

Thus, from the clinical practice perspective and experience, we note that current available instruments for HIV infection, which focus mainly on quality of life domains, are becoming obsolete in assessing the needs and challenges that people living with HIV face daily. A comparative review [8] has also pointed out the limitations of the current approaches to disability and quality of life measurement.

Research addressing these concerns is urgently required and may help to produce more precise feedback from relevant psychosocial indicators to consider in the comprehensive assessment and care of people with HIV or AIDS. The availability of a specific multidimensional measure including these topics may provide the health care system and professionals with an effective and a practical tool to screen psychological predictors.

This work is part of a larger multicentre research task-force addressing assessment and intervention on psychological predictors directed toward fostering quality of life and well-being in people with HIV/AIDS. This report aims to describe relevant indicators associated with the experience of wellbeing and quality of life, namely, the initial development of a psychometric sound measure for the assessment of psychological predictors for adjustment, wellbeing, and quality of life.

Methods

Study subjects, Setting, Design, and Procedures

Ethical approval was granted by the Research Ethics Committee of universities and hospitals involved in the study, and all the volunteers participating signed a patient informed consent form. HIV-infected adult men and women were contacted through hospitals, non-governmental organizations (NGO) and patients associations. No financial incentive for participation at this stage of the study was provided to participants. All the procedures, data collection, and statistical analysis described in this work were set between March 2010 and June 2011.

The steps followed for the instrument's development used standard questionnaire development guidelines and methodologies [9, 10]. A literature review was included to identify relevant topics on the matter, focus groups to gain relevant topics from the person's perspective, qualitative analysis to identify significant domains, development of a pool of items based on the literature review and qualitative analysis, evaluation of the pool of items by experts, cognitive debriefing on comprehension and relevance of questions selected for the questionnaire, and pilot testing. Figure 1 represents schematically the research design, procedures, and sample enrolled in this work. All these steps will be described in detail in the next sections.

Development of the New Measure

Four steps were followed in order to develop a new self-report measure to assess psychological factors that are expected to explain individual differences in adjustment,

Fig. 1 Summary of the research design, methods of data collection, and procedures

Steps of the research	Procedures	Participants involved
Step 1		
Literature review	Identification of initial domains and content	Authors
Step 2		
Qualitative study with focus groups	Identification of initial domains and content	N = 38 HIV+
Step 3		
Development of an item pool	Definition of the construct (facets) and construction of items	5 Authors
	Interjudgement process and experts rating	9 Experts
	Cognitive debriefing interview	N = 10 HIV+
Step 4		
Pilot testing	Assessment of items quality by empirical criteria Assessment of instrument structure	N = 84 HIV+

wellbeing, and quality of life of HIV infected men and women.

As a first step to developing our measure, an exploratory literature review on psychosocial predictors of well-being and quality of life in HIV research was realized. Scientific literature data bases (PubMed and PsycINFO) were consulted, looking for research published between 1996 and 2009. General descriptors in English were employed—i.e. (predictors OR determinants) AND (quality of life) AND (HIV OR AIDS). Additional criteria for selecting proper material were applied (e.g. studies addressing adult samples with self-report questionnaires; included a validated quality of life questionnaire as an outcome measure; published in a peer reviewed journal; review articles or studies addressing predictors that were not a psychosocial variable were excluded). Selected references were then compiled in a table in order to identify evidence for potential indicators of prediction of wellbeing and quality of life change.

The second step, in order to develop our measure, was to include the perspective of people living with HIV, addressing a qualitative study with focus groups to identify relevant indicators and needs related to living well. Focus groups and qualitative analysis followed standard

techniques and procedures [11]. In this step, 38 persons living with HIV—men and women—selected from centers associated with the research project, took part in the focus groups. Diversity in socioeconomic status, educational level, and disease status were taken into account to select participants. Four focus groups were planned and performed by trained psychologists and audio recorded. Before audio recording, the right to confidentiality of participants was confirmed and written permission was requested. Single meetings for each group of up to 2 hours took place between March and June of 2010. The focus group interview was unstructured, and facilitators asked open-ended questions to frame and start the session. Facilitators also had guiding questions to ensure that all points related to the research question were covered by the group.

The material collected from the focus groups consisted of transcripts for posterior qualitative approach analysis [11]. Qualitative content analysis of the material collected was performed by a team of eight experts in qualitative research (divided into two groups). The team of experts deliberated and agreed on the final report of results for content analysis. Procedures for analysis included reading of interviews transcribed, identification of relevant

concepts by inductive process, labeling of concepts and provisional identification of categories and subcategories, identification of dimensions of categories, and frequency analysis of the times that certain categories or subcategories were mentioned by participants. No software was employed in this process. The list of categories from the analysis is shown in Table 3.

The third step in the development of our measure includes drafting a pool of potential items covering relevant topics. In order to draft elements for the questionnaire the researchers: (1) deliberated, agreed, and wrote a definition of the construct (facet) to be evaluated; (2) drew up items tapping the construct defined, and agreed on those elements which were a fit; (3) decided on the answer format scale for the questionnaire (i.e., a 100 mm in length Visual Analogue Scale (VAS) anchored by word descriptors at each end [12] format response was chosen).

Subsequently, the pool of items and respective answers adapted to a questionnaire format was sent to 10 experts in the field to rate and assess the clarity, representativeness, and relevance of items using a standard form assessment tool [13], developed in previous published research.

In addition, the revised items using experts' suggestions were submitted to the assessment of people with HIV or AIDS through a cognitive debriefing interview. Ten HIV-positive men and women were selected in order to assess comprehension and feasibility of the reviewed pool of items and VAS format response.

The fourth step addressed the pilot testing of the revised questionnaire elements. The objective of this step was to assess items-quality by empirical criteria. Pilot testing includes 84 persons living with HIV from different regions of Spain. The pilot testing helps to depurate the elements based on empirical criteria (e.g., missing responses, floor and ceiling effects, item-total correlation, internal consistency, facets' unidimensionality). Finally, the remaining elements were submitted to an Exploratory Factorial Analysis, to assess evidence for the structure of the instrument. In addition, good fit indexes were calculated to complement the information regarding the questionnaire structure.

Results

Development of the New Measure

Step One: Literature Review on Psychosocial Predictors of Well-being and Quality of Life in HIV Research

Exploratory scientific literature review led us to 72 scientific studies addressing psychosocial factors determining well-being and quality of life. This exploratory review helped us to identify relevant indicators that should be taken into

account in the new measure. We selected a list of examples of relevant articles showing evidence of psychosocial predictors of quality of life, by each variable, and described it in Table 1. Topics are presented in terms of risk or protection factors of quality of life experience. Predictors identified in the literature included: social support, spirituality/religiousness, active problem solving coping, physical activity/exercise, self-esteem, stress, economical worries, depression, and negative vital events/stressors.

In addition to the previous review, other variables were found related (positively or negatively) to the experience of well-being, mental health or quality of life in people with HIV or AIDS; for example, perceived stigma [30–33], optimism [34–36], and emotional loneliness [37].

All this information was taken into account, to contrast information resultant of focus groups, and to develop potential items assessing predictors.

Step Two: Qualitative Study with Focus Groups Addressing Relevant Indicators and Needs to Living with Quality and Well-being

In order to include the perspective of people living with HIV or AIDS in the detection of relevant aspects or domains which explain well-being and quality of life experiences, focus groups were performed. The material from focus groups consisted of transcripts and was analysed using a qualitative approach, following standard techniques and procedures [11].

Thirty-eight men and women living with HIV were selected for convenience from centers associated with the research project to take part in the focus groups. Diversity in socio-economic status, educational level, and disease status were taken into account when selecting participants. A total of four focus groups—i.e. only one heterosexual women ($n = 18$), only one gay men ($n = 9$), and two mixed (total $n = 11$) with heterosexual or homosexual men and women—of different regions of Spain (i.e. Barcelona, Bilbao, Madrid, and Valencia) were performed by trained psychologists and audio recorded, with the permission of participants, for posterior transcription. Single meetings for each group of up to 2 hours took place between March and June of 2010. The focus group interview was unstructured, and facilitators post open-ended questions to frame and start the session. Facilitators also had guiding questions to ensure that all points related to the research question were covered by the group.

Content analysis of the information collected

Content analysis of the material collected was performed by a team of eight experts in qualitative research and a final report of results was agreed. Procedures for analysis included reading of interviews transcribed, identification of

Table 1 List of selected examples of psychosocial variables related to quality of life: evidence from the literature

Variables	Year of publication, Journal [Reference]	QoL measure outcome (Acronym)
Protection factors		
Social support	1999, International Journal of STD & AIDS [14]	MOS-SF-36
	2000, AIDS Care [15]	MOS-SF-36
	2002, Atención Primaria [16]	MOS-SF-30
	2002, AIDS Care [17]	MOS-SF-20
	2002, Psychology, Health & Medicine [18]	MOS-SF-36
	2005, AIDS Patient Care & STDs [19]	HCSUS-31
	2007, Quality of Life Research [20]	HCSUS-31
Self-esteem	2007, Journal of the Association of Nurses in AIDS Care [21]	HCSUS-31
	2001, European Journal of Public Health [22]	MOS-SF-36
Spirituality/religiousness	2006, Journal of General Internal Medicine [23]	HAT-QoL
	2007, Journal of the Association of Nurses in AIDS Care [21]	HCSUS-31
Coping, active problem solving	2002, Psychology, Health & Medicine [18]	MOS-SF-36
	2007, Quality of Life Research [20]	HCSUS-31
Physical activity/exercise	2008, Quality of Life Research [24]	WHOQoL-Brief
	2007, Journal of the Association of Nurses in AIDS Care [21]	HCSUS-31
Risk factors		
Economical dependency in others (unemployment)/economical worries	2005, International Journal of STD & AIDS [25]	MOS-HIV
	2006, Journal of General Internal Medicine [23]	HAT-QoL
	2007, AIDS Care [26]	MOS-HIV
	2006, Journal of Acquired Immune Deficiency Syndromes [27]	MOS-SF-36
Stress/psychological distress	2001, European Journal of Public Health [22]	MOS-SF-36
	2007, Journal of the Association of Nurses in AIDS Care [21]	HCSUS-31
Depression	2005, AIDS Patient Care & STDs [19]	HAT-QoL
	2006, Journal of General Internal Medicine [23]	HCSUS-31
	2006, Journal of Acquired Immune Deficiency Syndromes [27]	MOS-SF-36
	2008, Brain, Behavior, and Immunity [28]	MQoL-HIV
Negative vital events (stressors)	2007, Drug and Alcohol Dependence [29]	MOS-SF-12

HAT-QoL HIV/AIDS-targeted quality of life instrument, *HCSUS-31* HIV Cost and Services Utilization Study—31 items, *MOS-SF-36/SF-30/SF-20/SF-12* Medical Outcomes Study—short forms, *MQoL-HIV* multidimensional quality of life questionnaire for persons with HIV, *MOS-HIV* Medical Outcomes Study—HIV, disease-specific version, *WHOQoL-Brief* The World Health Organization quality of life—brief version

relevant concepts by inductive process, labeling of concepts and provisional identification of categories and subcategories, identification of dimensions of categories, and frequency analysis of the times that certain categories or subcategories were mentioned by participants. The categories resulting from the analysis are shown in Table 3.

Content analysis results were taken into account, in addition to the literature review, to develop potential items assessing predictors.

Step Three: Development of a Pool of Potential Items Covering Relevant Topics

Procedures for the development of a pool of potential items covering relevant psychological topics included the following steps:

(a) *Definition of the Construct (facet) to be Evaluated* Following guidelines for semantic definition [38, 39] of the facets or domains being assessed, a theoretical conceptualisation of each was performed, considering the literature review and content analysis. This procedure contributed to the support of evidence for content and construct validity [40, 41]. Five experts from the project developed independent definitions regarding all facets, and met after for the agreement of a final definition of each facet.

(b) *Items Construction and Development* The same five experts from the preview step wrote independently at least three or four different items for each facet defined, and met for agreement on a final pool of items for each facet. Criteria for drawing up an item were: use simple, clear, and

direct language; avoid items with ambiguous interpretation, or more than one meaning in a phrase; avoid items addressing past instead of present tenses; avoid including words related to absolutism (e.g., never, always, nothing) or vague language (e.g., occasionally, merely); avoid items that induce certain type of answers motivated by social desirability. At the end of this step, 96 items remained in the main pool of items and were ready to send to external experts for rating.

(c) Interjudgement Process and Experts Rating: Assessing Clarity, Representativeness, and Relevance of Items Nine out ten research experts in HIV responded to our consultation to rate the potential pool of items in terms of (1) level of comprehension (wording and clarity), (2) representativeness of the items for the construct being evaluated, (3) relevance for HIV, and (4) items suggestion for improvement if necessary. These ratings allowed us to decide whether the item had to be retained, reviewed or rejected, and if it matched the associated facet. The criteria established to decide retention, modification or rejection of items were: (a) comprehensiveness—an item was reviewed if agreement on clarity was below 80 %; (b) representativeness and relevance—an item was omitted if less than 80 % found the item relevant to HIV; (c) modification—an item was rephrased if more than 20 % of experts recommended modification. This process also included opinion on the response scale format chosen for the questionnaire (i.e., VAS). This step allowed omission of three items that did not achieve agreement criteria among experts in terms of clarity, representativeness, and relevance, and 15 items were reviewed following judges' suggestions. A pool of 93 items remained as potential questions for the questionnaire. Ninety percent of the judges agreed with the VAS response format for the questionnaire, and the words descriptors anchored at each end: 'not at all like me' to 'very much like me' (anchors translated from Spanish).

(d) Cognitive debriefing with people with HIV or AIDS on revised pool of items Ten additional individual interviews with HIV-infected men and women were conducted in order to assess the comprehension and feasibility of the reviewed pool of items. Interviewees had first to read and answer the questionnaire, and then the psychologist interviewer asked them about any difficulties in comprehension (e.g., words, sentences, and meanings) and suggestions. Evaluations of feasibility (yes/no) for the VAS response format were also questioned. General feedback from the interviewees shows that all items addressing relevant issues were easy to understand and answer. Small changes in wording were implemented in this step.

Step Four: Pilot Testing

(a) Assessing Items-quality by Empirical Criteria Eighty-four men and women living with HIV from different regions of Spain answered the pilot testing of the questionnaire. Completion time of the preliminary version questionnaire for the pilot testing was 26 min approximately.

The following criteria were considered for the second wave of item deputation based on empirical criteria. Table 2 shows the criteria applied. If one of the rejection criteria was fulfilled, the item was omitted.

After the item level deputation described in Table 2, sixty-three items remained as potential questions for the instrument assessing psychological predictors. Table 3 shows the facets and number of items in each facet. Cronbach's alpha for the final items in each facet is shown, and correlation is presented as well for facets with only two items. Most of the facets achieved the expected Cronbach's alpha index of 0.70. However, since the number of items is crucial for Cronbach's alpha calculation, alpha lower than 0.70 for scales with only two or three items may not be considered an indicator of low consistence.

Table 2 Empirical criteria for item omission from the 93-item version of the questionnaire

Step	Type of criteria to omission (applied consecutively)	Number of items omitted
First	Missing values (If >20 % item omitted)	0
Second	Floor effect (percentage of respondents at lowest possible scale level (If >25 % item omitted)	0
	Ceiling effect (percentage of respondents at highest possible scale level (If >25 % item omitted)	5
Third	Corrected item-total correlation (If <0.30 item omitted)	11
Fourth	Change in alpha if item is omitted	5
Fifth	Unidimensionality of the facets (Factorial Exploratory Analysis (Generalized Least Squares, Oblimin with Kaiser) were performed with items from each facet. Items that load was less than 0.30 in the facet, were considered for omission	7
Sixth	Facets that, after steps 1st to 5th, remain with a single item were omitted	2
	Total	30

Table 3 Final pool of items in the questionnaire: 63 items and 23 facets

Facets ^a (number of items)	Cronbach's alpha (Pearson's correlation for facets with 2 items)
Social support (3)	0.72
Self-esteem (2)	0.70 (0.54)
Body image—satisfaction (2)	0.90 (0.83)
Body image—disfigurement (3)	0.65
Problem solving coping (3)	0.73
Positive reframing (3)	0.95
Optimism (2)	0.86 (0.75)
Personal meaning (3)	0.67
Personal values change (3)	0.85
Personal autonomy (2)	0.70 (0.55)
Disease knowledge (3)	0.82
Satisfaction with sexual activity (3)	0.70
Health behavior (3)	0.67
HIV activism (3)	0.89
Economical worries (3)	0.75
Enacted Stigma—personal experience of rejection (2)	0.77 (0.62)
Enacted Stigma—perceived group rejection (2)	0.62 (0.45)
Internalized stigma (3)	0.78
HIV stress-related (3)	0.84
Negative mood HIV-related (3)	0.83
Avoidance coping (3)	0.73
Emotional loneliness (3)	0.76
Illness representation (3)	0.53

^a Facets were translated from Spanish to English for the present paper

b) Assessing instrument structure Finally, to explore factorial structure of the new questionnaire, an Exploratory Factorial Analysis (EFA, Generalized Least Squares [GLS], First Oblimin followed by Varimax rotation) was performed with facets. Total scores for each facet were computed (sum of items in each facet: item parceling method [42, 43]) before performing EFA. The EFA showed the same structure for both rotation methods, Oblimin (correlated factors hypothesis, data not shown) and Varimax (independent factors hypothesis), with little differences in item loadings. The structure and loads presented here represent the Varimax output. A six-factor structure explaining 56.5 % of variance was found, and good fit indexes were achieved for the present structure and number of factors chosen ($N = 84$; $\chi^2 = 113.110$, $gl = 130$, $p \geq 0.05$; $RMSEA = 0.017$ [IC90 % 0.000–0.057]). Table 4 presents details of factor loadings for each facet, and the percentage of variance explained by factor. The expected effect (theoretical model) on well-being and quality of life outcomes is also included in the table (first column).

Discussion

This paper described the development of a disease-specific psychological assessment questionnaire for adults with HIV infection or AIDS, which we believe is useful, reliable, and valid for the target population. This new measure has several strengths, from our point of view: (1) it was developed and conceptualized in collaboration with a national multicenter task force; (2) included a literature review, focus groups and qualitative approach, and expert opinion to develop relevant items; (3) tested comprehension and feasibility through cognitive debriefing interviews (i.e., the elements in the questionnaire were perceived as relevant, easy to understand, and answer); (4) used a pilot testing to depurate the questions in the final version of the questionnaire; and (5) assessed preliminary psychometrics for the new measure (pilot testing sample).

In addition, although the instrument is a 'persons living with HIV' centered measure, the selection of the content included in the questionnaire was based on relevant literature, professional experts, and persons living with HIV opinions, in order not to omit the most important issues faced by people living with HIV today. These procedures, in addition to the theoretical definition of the constructed covered by the instrument, and the experts' review of items, contributed to support the face validity [40] (extent to which a measure seems to address a phenomenon on face value, or intuition) and the content validity [40] (the extent to which a measurement reflects the specific intended domain of content) of the questionnaire.

The participation of patients and experts from different regions of Spain ensured the inclusion of possible differences related to geographical characteristics and the feasibility of the final questionnaire for its use in the whole country.

Items quality assessment contributed to the selection of the best items for the instrument and assured that the hypothetical structure of the measure was coherent. Application of EFA shows an empirical structure model with goodness of fit, covering six principal domains through 23 facets of psychological aspects. Thus, the domains hypothetically focus on risk and protection factor for well-being and quality of life experience, as the literature show.

Taking into consideration the encouraging data presented here, we may suggest that the present questionnaire could be a useful measure for application in future research, addressing the psychological predictors. As similar publications are not available at this point, this work makes a contribution to the screening of these factors related to an alteration in health outcomes, and might help—once assessed—to develop them in order to improve adjustment, well-being, and quality of life of those living

Table 4 Structure of the new questionnaire for assessing psychological predictors (Exploratory Factor Analysis (GLS), Varimax rotation, $N = 84$)

Facets	Factor loading					
Theoretical model (expected effect in wellbeing and QoL)	F1—Emotional distress experience related to HIV	F2—Personal growing attitude and positive coping	F3—Cognitive change related HIV [positive appraisal]	F4—Active coping focus on collective action and social support	F5—Perceived rejection related HIV and avoidance coping	F6— Personal experience of rejection
Risk						
HIV stress-related	0.86					
Negative mood HIV-related	0.83					
Emotional loneliness	0.80					
HIV illness representation	0.57					
Internalized stigma	0.57					
Economical worries	0.43					
Satisfaction with sexual activity	0.38					
Protection						
Body image— satisfaction		0.78				
Health behavior		0.59				
Problem solving coping		0.56				
Disease knowledge		0.51				
Self-esteem		0.38				
Personal autonomy		0.36				
Protection						
Positive reframing			0.98			
Personal Meaning			0.61			
Personal values change			0.59			
Optimism			0.51			
Protection						
Social support				0.75		
HIV activism				0.68		
Risk						
Avoidance coping					0.88	
Enacted Stigma— perceived group rejection					0.42	
Stigma –personal experience of rejection						0.66
Body image — disfigurement						0.50
% of variance	16.6 %	10.9 %	10.1 %	7.4 %	5.9 %	5.5 %

with HIV. Therefore, the availability of a HIV-specific psychological predictors measure is expected to be of great help for the management of HIV infection from the intervention perspective and as a screening tool for health care providers.

In terms of the present work's limitations, we should mention that the exploratory review that we performed at the beginning of the study is not exhaustive, and, as consequence, we may have left out other potentially relevant psychosocial predictors for wellbeing and quality of life. Another point to mention is, as we opted for a brief measure as possible, but at the same time trying to cover for several relevant aspects, it led us to choose a limited number of elements in each facet of the questionnaire. The concern was that having two or three items in each facet may result in low levels of reliability for some facets. However, we think that the use of VAS answer format balances this limitation, since VAS are of most value when looking at change within individuals [12]. Thus, we expect that instrument characteristic will help to increase the sensitivity of scoring change after interventions instead. Moreover, some of the facets that were expected to be clustered were located in separate factors by the EFA (e.g., 'internalized stigma', 'enacted Stigma—personal experience of rejection', and 'enacted Stigma—perceived group rejection'). At this point we have no clear explanation for this unexpected outcome. A future confirmatory factor analysis with an extended and representative sample will help us to answer that question.

Future research, therefore, should focus on confirmatory factor analysis of the preliminary questionnaire version presented here, in a Spanish representative sample. Furthermore, additional evidence of validity based on construct, convergent, and criterion indicators needs to be explored.

Finally, it is not clear how well these results might generalize to regions outside of Spain, particularly low and middle income countries with higher HIV prevalence rates and more limited treatment options. Future translation of the present instrument into other languages must be submitted to a full validation process.

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