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Masculinity and uptake of HIV services: validity of the Conformity to Masculine Norms Inventory-22 in Malawi and Zambia

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BACKGROUND

Men continue to have lower rates of HIV testing and ART initiation and often access these services at later stages compared to women [1-3]. Qualitative research suggests the influence of masculine norms in delaying HIV service uptake due to risk undervaluation, disregarding of symptoms, or the perception that HIV infection and treatment undermines social and economic positioning [4-6]. Masculinity measures have aimed to quantitatively capture the relationship between masculinity and health-seeking [7], but have seldom been used in sub-Saharan Africa and in the context of HIV [8]. We aimed to assess the factor structures of established masculinity measures for use in rural Malawi and Zambia.

METHODS

We started with Thompson and Bennett's review [7] of measures of masculinity ideologies and selected a measure based on (i) predictive value of the measure on health-seeking outcomes and (ii) previous validation in a sub-Saharan context. Based on these criteria, we selected the Conformity to Masculine Norms Inventory (CMNI) [9-11] and opted for a shortened 22-item version. The CMNI-22 takes the two highest loading items from each of the 11 factors from the original CMNI-94 while retaining strong validity [12]. The items were translated, back-translated and piloted. Items related to disdain for homosexuality were dropped due to local applicability, leaving 20 items.

The measure was then administered to male members of randomly selected households in Malawi (n=485) and Zambia (n=341). The module was nested in baseline household surveys as part of impact evaluations of community-based distribution of oral-fluid HIV self-testing kits. The questionnaire was given in rural districts in Malawi (Blantyre, Machinga, Mwanza and Neno) and both rural and peri-urban districts in Zambia (Choma, Kapiri Mphoshi, Lusaka, Ndola). To analyse the measure's psychometric properties, we performed iterated principal factor analysis with oblique rotations [9]. Sampling adequacy, Kaiser-Meyer-Olkin (KMO), and internal consistency, theta, were also calculated.

RESULTS

- KMO measures were 0.80 in Malawi and 0.65 in Zambia, indicating adequate sampling in Malawi but mediocre sampling in Zambia.

CONCLUSION

The absence of a one-factor solution indicates that the scale does not measure a cohesive construct, specifically masculine norms in rural Malawi and Zambia. The interpretability of items loading onto the retained factors also has mixed meanings, suggesting poor performance of the short-form scale. Without a valid measure, we were

- Internal consistency of the measurement was acceptable with $\theta=0.876$ in Malawi and $\theta=0.742$ in Zambia.
- Three factors were retained from the iterated principal factor analysis in both countries based on the magnitude of the eigenvalues (>1) and total variance captured, with 62.5% in Malawi and 47.4% in Zambia.
- In Malawi, the predominant items were related to playboy, violence and winning for the first factor; dominance for the second factor; pursuit of status for the third factor (Table 1).
- In Zambia, the predominant items were related to playboy for the first factor. The second and third factors loaded across a range of items (Table 1).

Table 1. Iterated principal factor matrix using oblique rotations and a three-factor solution

Item	Malawi				Zambia			
	Factor 1	Factor 2	Factor 3	Uniqueness	Factor 1	Factor 2	Factor 3	Uniqueness
Primary of work 1	-0.391	0.369		0.707		0.344		0.872
Primacy of work 2	-0.369			0.825			-0.338	0.832
Dominance 1		0.609		0.620		0.492		0.740
Dominance 2		0.603		0.581			0.560	0.632
Risk taking 1	0.318	-0.434		0.711				0.883
Risk taking 2			-0.391	0.789	0.305			0.897
Power over women 1		0.447		0.775		0.339		0.846
Power over women 2	0.454		0.343	0.614	0.656			0.555
Emotional control 1		-0.637		0.515		-0.537		0.711
Emotional control 2	0.319	-0.589		0.538		-0.503		0.743
Playboy 1	0.652			0.573	0.619			0.574
Playboy 2	0.747			0.442	0.513			0.658
Violence 1	0.323	-0.330		0.779				0.934
Violence 2	0.537			0.680	0.342			0.784
Pursuit of status 1			0.303	0.789			-0.336	0.886
Pursuit of status 2			0.406	0.820				0.892
Winning 1	-0.481			0.698				0.839
Winning 2	-0.479	0.357		0.591	-0.400			0.762
Self-reliance 1			-0.413	0.817			0.538	0.680
Self-reliance 2			-0.307	0.877				0.912

Malawi: N=485, Zambia: N=341
Factor loadings <0.30 omitted

unable to test the relationship between masculinity and HIV service utilisation as intended. The gender gap in uptake of HIV services remains an important challenge to address. Development of a locally validated and generalisable psychometric measure could provide a way of understanding masculine behaviours and their implications on uptake of HIV services on a wider scale.

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