Psychometric Properties of the Medical Outcomes Study in People with HIV and AIDS

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Abstract

The purpose of the study was to assess the psychometric properties of the Medical Outcomes Study Social Support Scale (MOS-19 items) on a Greek sample of people living with HIV/AIDS. The MOS-19 was administered in 140 participants. The second questionnaire that has been used for construct validity of the MOS was the Social Support Questionnaire 6 (SSQ6). Factor analyses have been conducted and MOS was assessed for its validity and reliability. Factor analysis revealed one factor accounted for 68.08% of the variance. The scale showed good construct validity. The internal consistency measured by Cronbach's alpha was assessed concerning reliability coefficients of the questionnaire showing a good internal consistency (α= 0.97). Overall test–retest reliability was satisfactory at p <0.0005. Concluding, the Greek version of the MOS Social Support Scale is a reliable and valid scale measuring social support of people with HIV and AIDS.

Key words: MOS Social Support Scale, psychometric properties, social support, AIDS/HIV

1. Introduction

Social support is an important construct concerning perceived available assistance and the actual support that people received. Social support refers to a social system consisted of sources as well as types of support (Hogan, Linden, & Najarian, 2002; van Dam et al., 2005).

In the literature, there is a distinction between structural i.e. type of relationships, family status etc. (Helgeson, 2003) and functional aspects of social support involving emotional, instrumental, informational support and support of satisfaction (Kafetsios, 2006). Informal caregivers relatives, friends and informal caregivers professionals are the sources of support (Hogan et al., 2002; van Dam et al., 2005), where types of social support consisted of emotional support providing support/advice, instrumental support i.e., tangible assistance such as help with childcare, housekeeping, providing transportation or money, information or education, and appraisal support e.g., assisting individuals in self-evaluation (Orrick et al., 2011).

In addition, social support has an impact on health outcomes, by providing access to information and by enhancing motivation in engaging to more adaptive behaviors (Bloom, 1990). HIV/AIDS affects all dimensions of a person's life: physical, psychological, social and spiritual. Moreover, there are positive relations between the presence of social support and both physical and mental health (Jia et al., 2004; Rueda et al., 2011; Rui Perez et al., 2005) as people who experienced social support had better mental health than those without perceived social support (Liu et al., 2006; McDowell & Serovich, 2007). Furthermore, literature revealed that people living with HIV/AIDS satisfied from their perceived support experienced less psychological distress, higher quality of life and higher self esteem (Johnson et al., 2001; Li, Sung-Jae, Panithee, Chuleeporn, & Rotheram-Borus, 2009; Safren, Radomsky, & Otto, 2002; Turner-Cobb et al., 2002). Counselling and social support can help people and their carers cope more effectively with the infection and illness; the current types of support can assist people in making informed decisions, as well as dealing more effectively with social isolation, their psychological well-being, stigma and discrimination (Asante, 2012; WHO, 2007).

Prospective studies concerning people living with HIV revealed that perceived social support has been related to decrease of CD4 T-cells, less increase in HIV symptoms and thus better physical health as well as longer survival (Ashton et al., 2005; Blomkvist et al., 1994; Patterson et al., 1996; Solano et al., 1993; Theorell et al., 1995).
Furthermore, when people receive social support may cope their life stressors because of their expectations of others' family, neighbors, friend assistance (Galvan, Davis, Banks, & Bing, 2008; Pierce, Sarason, & Sarason, 1996 ; Sun, Wuc, Qud, Lu, & Wang, 2014). Health care professionals' volunteers and friends have vital contributions in providing information and tangible support for treatment of people living with HIV and AIDS (Harris & Larsen, 2007). From all sources of emotional support family seemed to be the major one (Crystal & Kersting, 1998; Shippy, 2007) as the strong bonds between family members, sometimes, can not be replaced by other network members (Forouzan, Shushtari, Sajjadi, Salimi, & Dejman, 2013). However, due to the social stigma related to HIV/AIDS, people preferred to avoid seeking support from others increasing psychological problems, isolation and loneliness (Sun et al., 2014). In a very recent study regarding HIV and AIDS related stigma (Kipp et al., 2015) authors suggested that loss of social relationships may reflect rejection and social withdrawal by others probably due to individuals' protection from past experiences on negative reactions. In addition, when people's fear of disclosure regarding their infection and illness is stronger than their need for relationships, the desire to conceal one's HIV status may lead to a loss of social relationships.

The Medical Outcome Study Social Support Scale MOS is one of the most used instruments evaluating social support (Sherbourne & Stewart, 1991). It is a brief and self administered instrument developed for patients with chronic diseases. Factor analysis of the original validation study showed four functional support scales ('emotional/informational, tangible, affectionate, positive social interaction) and an overall functional support index (Sherbourne & Stewart, 1991). Informational support includes information that the caregivers may use with tasks of their peoples' care, self care (Mahmud, Awang, & Mohamed, 2004). Some research has indicated that informational support for people with HIV and AIDS may impact decision making situations such as decisions for medical tests (Gattellari et al., 2005). Affectionate support on the other hand consists of providing empathy, care and trust. Instrumental support involves providing the caregivers with help with people's care and household tasks (Mahmud et al., 2004). The availability of instrumental support may depend on the relationship between the carer and the caring person; People that have strong bonds with the person that needs assistance or may be more available and with willingness to provide instrumental support than those who may not have a strong relationship with the caring persons (Dennis et al., 2009; Peterson, Rintamaki, Brashers, Goldsmith, & Neidig, 2012). It is worth noting that emotional support could be effective in a safety environment i.e with similar others where it is safe for the people to discuss their thoughts and feelings sharing to each other, expressing empathy within an environment of understanding and acceptance (Dennis et al., 2009). Furthermore, support groups are a common source of coping and emotional support for people living with HIV in urban areas (Heckman, Somlai, Kalichman, Franzoi, & Kelly, 1998).

The Medical Outcome Study Social Support Scale (MOS) has been translated and validated in many countries and in different populations (Mahmud et al., 2004). The purpose of the study was to examine the psychometric properties of the Greek version of the MOS social support scale (Short-form) for people with HIV and AIDS.

2. Materials and methods

The study was conducted in Special Infection Diseases Unit, Athens General Hospital "Korgialenio-Benakio National Red Cross" in Hellenic Center for Diseases Control and Prevention HCDCP in Athens, Greece, between December 2013 to August 2014.

2.1. Participants

A representative sample of 165 people with AIDS/HIV infection was selected from 400 people. From them 25 (15%) people were excluded from the study due to their refusal for their participation or their distance from the Center. Inclusion criteria were: HIV infected ability to communicate effectively with the health-care professionals, their written informed consent. Criteria for exclusion were: age <18 years of age. The study design included administration of the 140 participants (baseline evaluation) and 7 days later to test the scale's stability to a sample of 35 people.

All participants have completed a written informed consent for their participation in the current study. Hospital's ethics committee approved this study, which was conducted according to Declaration of Helsinki Principles and according to guidelines for Good Clinical Practice. Participants were interviewed by a trained psychotherapist; she also recorded data on disease status, treatment regimen and socio demographic characteristics (Table 1).

2.2. Instruments

The Medical Outcomes Study Social Support Survey (MOS) is a self administered social support survey including 19 items rated on a five-point Likert scale (1=Not at all- 5= All of the time). It is a self administered social support (Schwartze & Leppin, 1989). Factor analysis of the original validation study revealed four scales ('emotional/informational, tangible, affectionate, positive social interaction) and an overall functional support index (Sherbourne & Stewart, 1991). Emotional/Informational support consists of eight items evaluating the extent to which interpersonal relationships provide guidance, positive affect, and empathetic understanding. Tangible support comprises four items concerning material aid and behavioural assistance. Affectionate support includes three items that measure expressions of love and affection. Positive social interaction comprises four items regarding availability of someone with whom to have fun.

The second questionnaire that has been used for construct validity of the MOS Social Support Scale is the Social Support Questionnaire 6 (SSQ6), a brief one measuring social support. Every question has a two-part answer (the number of social supports and the satisfaction with social support) (Schraedley, Gotlib, & Hayward, 1999).
Translation of the MOS in Greek language was applied with "forward-backward" method; two independent translators translated it to Greek and then another two independent translators translated it back into English. A matching of these translations was then conducted. Finally, a review of translation by bilingual reviewers and a review of the translation of the English version and back translation were conducted. The translation followed the specifications provided by RAND Health.

3. Statistical Analysis

Internal consistency of the MOS Social Support Scale was determined by calculating Cronbach alpha coefficient (Cronbach α coefficient value of 0.7 shows satisfactory reliability for research purposes). The *validity* of the MOS Social Support Scale was carried out consisted of factor analysis, construct validity, the known group's validity, treatment effect validity and discriminate validity. *Confirmatory factor analysis* (*CFA*) was used to examine and confirm the factor of the MOS as suggested by the creator of the survey. The *CFA* was analysed with the Analysis of Moment Structure (AMOS) Version 7.0. For the acceptance or the rejection of the model global fit indices explained, included: the X^2-degrees of freedom (d.f) ratio<2.0, RMSEA<0:06, CFI>0:90, NFI>0:90, GFI>0.85, AGFI>0.85 indicate an acceptable fit.

Exploratory factor analysis (EFA) was conducted to identify a reliable factor structure EFA, using principal component extraction method with Varimax rotation, was conducted for all participants to determine the factor structure of the 19 items of the MOS. Items with factor loadings ≥40 (including values that rounded to 0.40) and those that did not load on more than one factor were retained. Factor analysis was then repeated until an adequate was attained in which all items included in the analysis met all criteria**.** *Construct validity* of the MOS Social Support Scale was analysed by establishing its correlation to the SSQ6 factors. *Known groups validity* of the MOS Social Support Scale was considered in terms of the ability of its scales to distinguish between subgroups of people formed on the basis of their family status (single vs. non single). One-Anova model was used for statistical analysis.

The reliability of the MOS Social Support Scale was then evaluated for the degree of stability with which the questionnaire measures the concept that it is supposed to measure. The estimation of reliability includes internal consistency reliability, test-retest reliability and parallel forms reliability. *Test-retest reliability* (stability) refers to the stability of peoples' response in time and it was determined by calculating ICC (intra class correlation coefficient) between the total scores of the initial assessment of the MOS Social Support Scale and the total scores of the reassessment. To assess test-retest reliability, we selected randomly 35 people and asked them to complete the questionnaire 7 days after the initial assessment. Statistical analysis was performed using SPSS version 17.0 (SPSS Inc., Chicago, IL, USA) and SAS version 7.0 (SAS Institute, Cary, NC, USA) statistical programs.

4. Results

4.1. Descriptive Analysis

The mean age of the participants was 43.10 (±11.96) years of age. The majority 121 (86.4%) were male and 19 (13.6%) were female. Single were 61.4%, married/ engaged were 20.7%. The mean duration of an antiretroviral therapy administration was 6.6 (±7.0) years. The mean scores of the MOS Social Support Scale were 3.46 (±1.09) with a range between 1.06-5.00.

4.2. Factor analysis

4.2.1. Confirmatory Factor Analysis (CFA)

The resulting global fit indices X^2 = 113.23, p <0.0005, chi-square-degrees of freedom (d. f.) ratio= 2.45, RMSEA = 0.102, CFI = 0.72, NFI = 0.68, GFI =0.59, AGFI = 0.57 showed that the four factor solution proposed by the author should be rejected.

4.2.2. Exploratory Factor Analysis

Exploratory factor analysis (EFA-principal component analyses with varimax rotation) was conducted to identify the factor structure of the MOS Social Support Scale. Principle axis factoring with direct oblimin rotation was conducted on 19 items and analysis showed that 1 factor could be extracted (eigenvalues >1.00). (Table 2). Item 12 was not retained in the model since it had loading <0.40. The 1 factor accounted for 68.083% of the variance (Table 3).

4.3. Construct validity

The psychometric analysis of the MOS Social Support Scale construct validity was assessed by correlating MOS Social Support Scale total scores with SSQ6 two factors. Moderate to high statistically significant correlations were found between the MOS Social Support Scale and SSQ6 factors respectively (F1: *Number of social supports*, r= 0.46, F2: *Satisfaction with Social Support*, r= 0.74, p<0.0005 respectively) demonstrating a good construct validity.

4.4. Known-groups validity

The MOS Social Support Scale was examined concerning its ability to distinguish between single (N=86) and those that were engaged (N=54). The MOS Social Support Scale discriminated well between subgroups of people participating in the study indicating that MOS social support scale scores were significantly higher in engaged people (3.34±1.15) compared with single (3.64±60.97, p=0.09).

4.5. Reliability

4.5.1. Internal consistency

The internal consistency measured by Cronbach's alpha was assessed concerning reliability coefficients of the questionnaire. Cronbach's alpha was 0.97 showing a good internal consistency higher than 0.6, suggesting that the items were interdependent and homogeneous in terms of the construct they measure.

4.5.2. Test-retest reliability

The stability (test-retest reliability) of people's responses was evaluated for the stability of patients' response in time by calculating ICC (0.948 (0.89-0.98) between the total score of the initial assessment of the MOS Social Support Scale and the total score of the MOS's reassessment (35 people were randomly selected and completed the questionnaire 7 days later). Because this coefficient does not correct for systematic differences and agreement by chance, the scores of the 2 assessments were tested for systematic differences by using the Paired *t*-test. The results of stability revealed that the MOS Social Support Scale scores were remarkably consistent between the two occasions (3.40±1.18, 3.42±1.19, p=0.772).

5. Discussion

A traumatic life event, may be viewed as a source of stress probably due to people's personal style of coping; social support may influence the way that individuals define each situation, either as stressful or threatening (Bloom, 1990; Sherbourne & Stewart, 1991). Thus, social support may promote psychological health (Sun, Wuc, Qud, Lu, & Wang, 2014). The current validation analysis suggested that the MOS Social Support Survey is a useful instrument for measuring social support in people living with HIV and AIDS in Greece. Our findings revealed that the psychometric properties of the instrument were satisfactory in the current population as well as to the earlier studies reporting good psychometric properties for the MOS social support scale (Sherbourne & Stewart, 1991).

The internal consistency of the instrument was high Cronbach's alpha=0.97 indicating the high level of homogeneity among items. It is worth noting that confirmatory factor analysis of 19 items of MOS Social Support Scale revealed one factor solution different from the 4 factor structure of the original validation sample (Sherbourne & Stewart, 1991) probably due to the fact that support dimensions such as emotional support or tangible support could not be discriminated in Greek people living with AIDS and HIV. Therefore, our analysis suggested the unidimensionality of the instrument a different result from others' findings (Mahmud et al., 2004); however, similar to our factor analysis, (Sherbourne & Stewart, 1991), proposed the construction of an overall support index if needed. Moreover, discrimination of social support components may be relevant for other population such as for patients with chronic illnesses (Mahmud et al., 2004). Additionally, sources from different research studies showed that that the relationship between social support and health may be different for people is concerning their physical and mental health in different contexts facing different types of stressors (Li et al., 2009). The questionnaire revealed good construct validity were there were found moderate to high statistically significant correlations between MOS Social Support Scale and SSQ6 factors respectively r= 0.46, F2 r= 0.74, p<0.0005. Known group's validity revealed that MOS Social Support Scale discriminated well between single people and engaged.

Furthermore, test retest reliability assessed after 7 days p=0.77 demonstrated its remarkable stability. Other studies showed differences between male and female where in Yadav's study (2009), females infected with HIV experienced less perceived satisfaction from social support than male. In Beine's study (2003), the authors suggested a cultural model of HIV/AIDS, where he referred to opinions perceived as a fatal, infectious, and sexually transmitted disease and further suggested perceptions that a patient living with AIDS and HIV labelled as a ''bad person'' the AIDS seemed to be a result of bad karma, while bad person and bad karma refer to persons that involve in immorality and prostitution which are against the moral and traditional customs.

It is noticeable that cultural values such as guiltiness, shyness, fear of stigma, accuses to their husband for the spread of HIV, shyness, and thus tabooing issues prevent women from disclosing their status, not to seek medical support or advices (Yadav, 2009). Furthermore, gay men seemed to receive significantly more social support from friends than family related to women, straight or bisexual men. The latter might stem from the fact that gay men may be emotionally more connected with their friends than their family (McDowell & Serovich, 2007). Nevertheless, in the current analysis there were not any statistically significant gender differences in terms of social support. The current result may explain by the heterogeneity of our sample as the vast majority of the participants were males which limited generalizability of the results;

However, the purpose of the study was to assess its psychometric properties and thus a further analysis with a larger sample of women should be studied as findings from the developed world revealed social support to be a stronger protective resource for women's health (Schraedley et al., 1989; Schwartze R, Leppin, 1989).

Concluding, the Greek version of MOS Social Support Survey appears to be easy administered to people living with AIDS and HIV. It displayed good psychometric properties in measuring social support among people living with AIDS and HIV with satisfactory validity and reliability results. Then, it can be used as a simple screening instrument measuring the overall social support of the current population. Further studies evaluating social support and the sources of the satisfaction that people living with AIDS and HIV are perceived could be beneficial for the health care professionals to identify the sources of support, as well as the factors that could influence the perceived social support.

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Table1. Socio demographic Characteristics

Ddemographic characteristics		N	%
Gender	Male	121	86.4
	Female	19	13.6
Family Status	Single	86	61.4
	Married or engaged	29	20.7
	Homosexual	25	17.9
Residence	With my partner	30	21.4
	Alone	75	53.6
	Relatives-Parents-Children	35	25.0
Education	Primary	5	3.6
	High School	71	50.7
	University	44	31.4
	Post Graduate	20	14.3
Profession	Retired	22	15.7
	Employee	19	13.6
	Freelance	54	38.6
	Unemployed	45	32.1
Income	<500 euro	45	32.1
	500-1500 euro	83	59.3
	>1500 euro	12	8.6
Country of Origin	Greece	126	90.0
	Other country	14	10.0
Insurance	Without Insurance	10	7.1
	With Insurance	130	92.9
	Mean±SD	**Min**	**Max**
Age	43.10±11.96	20	69
How long do you Know that you are infected with HIV?	9.00±7.26	1	28
How long do you receive Antiretroviral treatment?	6.6±7.00	1	26
How long do you receive Antiretroviral treatment from the hospitals' pharmacy?	.4±6.10	0	26

Table 2: Exploratory Factor Analysis

Items	Component
Item 6	0.88
Item 9	0.87
Item 19	0.87
Item 18	0.87
Item 3	0.85
Item 10	0.85
Item 16	0.85
Item 17	0.85
Item 11	0.85
Item 5	0.84
Item 7	0.84
Item 14	0.81
Item 4	0.81
Item 20	0.80
Item 8	0.79
Item 13	0.78
Item 2	0.71
Item 15	0.67

Table 3: Eigen values and Variance Explained

Items	Eigen values	% of Variance	Cumulative %
1	**12.25**	**68.08**	**68.08**
2	0.99	5.94	74.02
3	0.82	4.57	78.69
4	0.70	3.89	82.59
5	0.53	2.93	85.52
6	0.39	2.17	87.69
7	0.38	2.10	89.79
8	0.28	1.54	91.34
9	0.26	1.46	92.80
10	0.24	1.34	94.15
11	0.19	1.11	95.25
12	0.19	1.06	96.31
13	0.16	0.88	97.19
14	0.13	0.75	97.94
15	0.12	0.67	98.61
16	0.09	0.52	99.12
17	0.08	0.44	99.59
18	0.07	0.40	100.00

Note. Extraction Method: Principal Component Analysis