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Perceived social support affects disease coping among people living with HIV: a study in Tehran, Iran

Elham Faraji, Sara Sardashti, Mona Mohammadi Firouzeh*, Fatemeh Jahanjoo Aminabad, Seyed Ahmad Seyed Alinaghi, Mahboobeh Hajiabdolbaghi

Iranian Research Center for HIV/AIDS (IRCHA), Iranian Institute for Reduction of High-Risk Behaviors, Tehran University of Medical Sciences, PO Box Tehran, 1419733141, Iran

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ABSTRACT

Objective: To examine potential correlations between perceived social support and disease coping styles among people living with HIV infection at a referral center in Tehran.

Methods: In an observational study, 112 patients were recruited between April and July 2012. Along with demographic characteristics, availability of tangible, informational, and emotional support was measured using subscales extracted from the medical outcomes study: social support survey; disease coping styles were investigated in four groups (problem-focused, emotion-focused, engagement-based, and meaning-based). Data were analyzed to examine whether social support subscales predict coping styles.

Results: Almost 70% of the patients were male, and 52% reported sexual contact as their perceived route of infection. Use of coping styles was positively correlated with social support scores ($r_s = 0.53, P < 0.001$), and informational support had significant influence on implementation of three out of the four coping styles (emotion-focused, problem-focused, engagement-based). Being married and not reporting the route of infection were associated with higher social support scores; monthly income and level of education had significant associations with the use of various coping styles.

Conclusions: Patients who implement strategies to cope with HIV/AIDS have received more informational and emotional support. This study recommends that the delivery of informational support in a comprehensive package can practically target the current demands of our patients; while thorough investigation of potential effects on disease coping, response to treatment, and compliance can aid us in the design of interventions to target stigma at societal level.

1. Introduction

HIV/AIDS not only affects patients physically, but also challenges personal and psychosocial aspects of their life. Lifelong familial, economic, and psychosocial issues faced by affected individuals disorganize their personal and social activities. These patients are at high risk for experiencing mood disorders, which affect perceived symptoms, response to treatment, adherence to antiretroviral

treatment, and consequently quality of life[1-3].

Development of coping skills is essential for people affected by chronic diseases. Coping is identified as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person”[4]. A variety of distinctions has been made in the broad domain (*e.g.* problem-focused vs. emotion-focused) [3,5]; however, no single response represents the multidimensional construct of coping. The Stress and Coping Theory[4] rooted in the Social Cognitive Theory[6] offers a comprehensive picture of coping. This theory highlights person-environment transactions in the dynamic nature of coping while simultaneously recognizes individual factors that determine the appraisal of different coping styles. The nature of the stressors, the context in which patients experience stress and their changing interplay over time affect coping styles[3].

*Corresponding author: Mona Mohammadi Firouzeh, Iranian Research Center for HIV/AIDS (IRCHA), Iranian Institute for Reduction of High-Risk Behaviors, Tehran University of Medical Sciences; PO Box Tehran 1419733141 Iran.

Tel: +98-912-4022877, +98-21-6658158

E-mail: m.mohammadi.fr@gmail.com

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Cultural, religious and other contextual issues surrounding HIV/AIDS are integral to effective disease management[7]. Previous studies state that interpersonal relationships and social support networks are determinant in facilitating patients' coping with HIV[8]. Social support consists of "social relationships that provide (or can potentially provide) material and interpersonal resources that are of value to the recipients, such as; these include counseling, access to information and services, sharing of tasks and responsibilities, and skill acquisition"[9]. Due to the many changes in the lives of patients diagnosed with HIV, the need for social support has incredibly increased in the last decade[10]. Social support is associated with better immunologic outcomes and slower progression to AIDS[11-15].

A major theoretical model implemented in the evaluation of social support is based on the stress and coping perspective[16]. This model suggests that perceived social support buffers the negative effects of a stressful situation even in the absence of enacted social support[17-22].

This perspective could be beneficial for coping, and social support in the current situation of Iran's epidemic where HIV non-disclosure is highly reported among patients due to profound levels of stigma[7,23]. Providing HIV patients with proper guidance focused on coping behaviors is not feasible in the absence of a thorough insight into appraised strategies and styles[24]. No previous studies have investigated HIV/AIDS coping styles in Iran; and despite a recent study on social support networks of HIV infected people[25], the interconnectedness for social support and disease coping styles are not fully understood.

The higher rates of new HIV incidence among women compared to the HIV outbreak observed among injection drug users in the first decade of the 21st century, raises serious concerns for health authorities[26,27]. To devise appropriate response considering the specific needs and capacities of women, knowledge of resources of social support, and understanding the relation between social support and coping styles is highly implicated.

The present study targets disease coping styles and perceived social support among a group of people who live with HIV/AIDS in Iran. Our goal was to investigate these variables along socio-demographic characteristics of HIV infected patients who visited a major referral outpatient clinic. We hypothesized that "coping" and "social support" are correlated; and important variations exist among different groups of patients with regard to their general and demographic characteristics (*e.g.* age, gender, transmission route, *etc*); these variations needs to be understood to give a clear picture of the needs of affected groups for improvement of HIV diagnosis, surveillance and treatment services.

2. Materials and methods

2.1. Study design and setting

For this observational study that investigated social support, coping strategies, and the potential correlation between them, 112 HIV infected patients were recruited between April and July 2012.

Participants were selected from a convenience sample of men and women who visited the voluntary counseling and testing center of Imam Khomeini Hospital - a major referral HIV clinic in Tehran.

2.2. Data acquisition and questionnaire

All participants provided data regarding their demographic characteristics (*e.g.* age, gender, marital status, level of education, employment, and routes of transmission) were completed in the first section of a designed questionnaire by all participants. Two other sections of the questionnaire covered social support and coping strategies.

2.2.1. Social support

To investigate the availability of social support in the context of HIV/AIDS, we implemented the medical outcomes study: social support survey[28], which is a brief, self-reported and comprehensive psychometric tool that comprises 5 subscales and 19 items. Five major components of the survey included: 1) Tangible support, 2) Informational support, 3) Emotional support, 4) Positive social interaction, and 5) Affectionate support[29]. A 5-item Likert Scale was used for answers to questions; minimum and maximum total scores were 19 and 95, respectively. Higher scores revealed higher levels of perceived social support.

2.2.2. Coping strategies

Coping strategies implemented by HIV infected patients are recognized in previous studies, and measured via certain subscales[4,24]. Four major areas of coping were investigated in this study: 1) Problem-focused coping (11 items); we assessed cognitive-behavioral efforts of the patient to overcome stress, 2) Emotion-focused coping (9 items), we assessment of practical activities of the patient to approach the problem and find solutions, 3) engagement-based coping (9 items); assessment of relationships with others while facing the stressful situation, and 4) meaning-based coping (9 items); assessment of cognitive efforts of the patient to recognize positive aspects of the stressful situation[4].

Before initiating the study, the complete questionnaire (translated into Farsi) was sent out to experts in the field and distributed to a pilot sample of patients to check for reliability and validity of the translated questions. Required changes were made to the final structure of the questionnaire.

2.3. Statistical analysis

All analyses were performed with use of the statistical package for the social sciences (SPSS 16.0). Frequencies and percentages were calculated for demographic characteristics of patients. Mean \pm SE was reported for continuous variables.

The Kolmogorov-Smirnov test was used to examine the normality of dependent variables. To determine the effects of dichotomous categorical variables (*i.e.*, gender, marital status and employment

status) on continuous variables (social support and coping skills), independent samples *t*-test was computed. Other characteristic differences (*i.e.*, age groups, level of education, transmission route, and monthly income) were analyzed along continuous variables, using One-way ANOVA test.

Pearson's correlation analysis was utilized to examine correlations between social support and coping skill subscales. Also, multiple regression analysis was implemented to examine whether social support subscales predict coping strategies. The statistical significance level for all analyses was set at 0.05 ($\alpha=0.05$).

2.4. Ethical considerations

The study protocol was approved by the Ethical Review Board of Tehran University of Medical Sciences. Informed consent was provided by all participants after the goal and objectives of the study were explained to them and they were reassured regarding confidentiality. No identifying data were acquired in the questionnaire.

3. Results

3.1. Demographic characteristics

Between April and July 2012, 112 patients with a definitive diagnosis of HIV infection (two reactive ELISA antibody tests and a confirmatory Western Blot test) were recruited at the voluntary counseling and testing center of the Imam Khomeini Hospital. Eight (7.1%) patients refused to complete the questionnaire due to personal reasons; four (3.6%) patients were excluded due to previous history of psychiatric hospitalization (participation rate=89%). The majority of participants were male (69%) and most patients were younger than 30 years (22%). Table 1 indicates other demographic characteristics and distribution of model variables for categorical items.

Table 1

Demographic characteristics and distribution of model variables in categorical items among HIV infected participants at Imam Khomeini Hospital voluntary counseling and testing centre.

Variables	Levels	n (%)	Social support	Coping skills
			Mean \pm SE	Mean \pm SE
Gender	Females	31 (31)	69.71 \pm 3.06	132.48 \pm 4.16
	Males	69 (69)	69.23 \pm 2.17	132.39 \pm 2.80
Age	Less than 30	22 (22)	77.27 \pm 3.06	138.73 \pm 4.93
	30 - 39	52 (52)	66.60 \pm 2.55	130.98 \pm 3.08
	40 and higher	26 (26)	68.27 \pm 3.40	129.96 \pm 4.86
Marital status	Single	52 (52)	63.15 \pm 2.43	128.48 \pm 3.46
	Married	48 (48)	76.12 \pm 2.22***	136.69 \pm 2.94
Employment	Employed	37 (37)	68.89 \pm 2.74	129.41 \pm 3.26
	Unemployed	63 (63)	69.67 \pm 2.31	134.19 \pm 3.13
Education	Low education	53 (53)	65.40 \pm 2.54	124.79 \pm 3.48
	High education	47 (47)	73.87 \pm 2.29**	141.02 \pm 2.46***
Transmission routes	Sexual contact	52 (52)	68.08 \pm 2.54	134.85 \pm 3.78
	Needle sharing	40 (40)	67.95 \pm 2.69	130.10 \pm 4.22
	Other	8 (8)	85.00 \pm 2.56**	150.88 \pm 7.14**
Monthly income	Less than 200\$	35 (35)	68.60 \pm 2.96	122.63 \pm 3.69
	200 – 400\$	49 (49)	69.33 \pm 2.57	137.24 \pm 3.23
	More than 400\$	16 (16)	71.25 \pm 4.49	139.06 \pm 5.36***

** $\cdot P < 0.05$; *** $\cdot P \leq 0.01$.

3.2. Social support

Five subscales believed to reflect social support among participants, were measured to calculate total social support scores which were then analyzed and compared with regard to demographic categories. Use of the *t*-test showed that married participants reported higher mean social support scores compared to single participants ($t(98) = -3.92, P < 0.001$). Also it was found that there was a significant difference in the mean scores of social support between participants with lower educational level and those with higher educational level, means that higher educated participants showed higher mean social support scores, conditions ($t(98) = -2.45, P = 0.016$).

As sample size from transmission route and monthly income categories indicates that populations were not normally distributed, we used Kruskal-Wallis test to detect differences in these categories. Results from Kruskal-Wallis test showed a significant difference in the mean scores of social support among patients who used different transmission routes ($Chi\text{-square} = 7.56, P = 0.023$). Using the Mann-Whitney *U* test for multiple comparisons and assuming as 0.017 to control experimental wise error rate, individuals who were infected through sexual contact and needle sharing were found to have lower social support scores compared to others ($Z = -2.644, P = 0.008$; $Z = -2.618, P = 0.007$). No differences in social support scores were reported for other socio-demographic categories (Table 1).

3.3. Coping strategies

Mean \pm SE were calculated for the four subscales used to evaluate coping strategies among participants, and the total coping scores were calculated. To check for differences in the mean scores acquired for each coping style with regard to demographic characteristics, independent samples *t*-test and One-way ANOVA tests were implemented.

Using the *t*-test, we found a significant difference in the mean coping scores among patients at various educational levels ($t(98) = -3.72, P < 0.001$). Participants with low educational levels had significantly lower coping scores compared to participants who had high degrees. As sample size from transmission route and monthly income categories indicates that populations were not normally distributed, we used Kruskal-Wallis test to detect differences in these categories.

Results from Kruskal-Wallis test also showed a significant difference in the mean coping scores based on patients' routes of transmission ($Chi\text{-square} = 9.52, P = 0.009$). Using the Mann-Whitney *U* test for multiple comparisons and assuming as 0.017 to control experimentalwise error rate showed that, Patients classified as "others" (not sexual contact, nor needle sharing) had higher coping scores compared to those who reported needle sharing as their main route of transmission ($Z = -2.56, P = 0.009$). Additionally, the mean coping scores were significantly different based on patients' income levels ($Chi\text{-square} = 10.21, P = 0.006$): participants with more than 400 \$ income had higher mean coping scores compared to whom with less than 200 \$ income ($P = 0.003$).

Table 2

Multiple regression models for social support subscales and coping styles.

Coping skill	Tangible support		Positive social interaction		Affectionate support		Informational support		Emotional support		F-test	R ²
	β	t	β	t	β	t	β	t	β	t		
Emotion-focused strategies	0.09	0.92	0.28	1.05	0.04	0.15	0.25	2.73**	0.25	1.10	7.3**	0.28
Problem-focused strategies	0.001	0.01	0.19	0.71	0.12	0.44	0.46	5.02**	0.12	1.06	7.97**	0.29
Engagement-based strategies	0.07	0.74	0.64	2.42**	0.6	2.17*	0.47	5.16**	0.08	0.77	8.58**	0.31
Meaning-based strategies	0.02	0.2	0.73	2.56**	0.52	1.82	0.11	1.19	0.26	2.28**	6.68**	0.26

*: $P < 0.05$; **: $P \leq 0.01$; R² is the coefficient of determination.

3.4. Correlation analysis and multiple regressions

Correlation analysis between the total mean social support and coping style scores were conducted to address the main objective of the study. Results from Pearson correlation indicated that these two variables were positively correlated ($r_s = 0.53$, $P < 0.001$).

Multiple regression analysis was run to predict various coping styles along subscales of social support. Controlling for all selected independent variables, higher levels of informational support were associated with greater implementation of emotion and problem-based strategies ($\beta = 0.25$, $P = 0.01$; $\beta = 0.46$, $P < 0.001$). Furthermore, higher levels of both affectionate and informational support were also associated with the use of engagement-based coping styles ($\beta = 0.6$, $P = 0.03$; $\beta = 0.47$, $P = 0.01$), and higher positive social interaction scores were associated with engagement and meaning-based styles ($\beta = 0.64$, $P = 0.01$; $\beta = 0.73$, $P = 0.01$), which higher emotional support was associated with higher levels of meaning-based strategies ($\beta = 0.26$, $P = 0.01$) (Table 2).

4. Discussion

The aim of this study was to explore an association between social support and disease coping among HIV infected patients at a major local referral clinic, and our findings confirmed the presence of a positive correlation between social support and coping styles. A comprehensive understanding of the nature of this relationship is essential for improving targeted interventions.

Social support has been explained as a defensive mechanism against stressful situations and offered palliative effects through reinforcement of disease coping abilities[30]. Moak *et al.* have revealed an association between increasing perceived social support and reduced likelihood of depression, anxiety disorders, social phobia, and alcohol dependence among HIV-infected patients[31]. On the contrary, mental health and coping abilities are profoundly influenced by perceived stigma and several studies have also depicted the considerable effects of emotional social support on stigma[32,33]. Moreover, greater satisfaction with social support leads to reduced physical symptoms among HIV positive patients in previous studies[34]. In other words, social support can lead to acceptance of the nature of the disease, decreased involvement in high risk behaviors, and also adherence to treatment by increasing the utilization of appropriate coping styles. Our findings confirm the results of previous studies and at the same time direct attention

toward the prominent role of stigma reduction in the successful design and implementation of educational programs that aim development of disease coping styles for HIV infected patients.

In detailed analysis of subscales, we revealed that informational support predicted greater endorsement of emotion-focused coping. Previous studies have indicated informational support as a powerful tool for improvement of coping abilities; with increased informational social support, patients are enabled to utilize effective emotional strategies[35]. More specifically, informational support leads to more use of a reassessment strategy and less implementation of the avoidance-emotional style[30]. We propose that informational support results in disease awareness, and augments an individual's coping abilities. By providing information on transmission routes and on the long-term effects of adherence to treatment, we can assist patients to acquire insight into their disease status and improve their coping abilities. These findings also emphasize the determinant role of an integrated educational system that helps individuals to re-assess their experiences of disease and interpret their own situation less stressfully.

To address the secondary objectives of the study, we focused on implementation of various coping styles and levels of perceived social support along different socio-demographic groups of patients. Most patients in this study were males, single aged 30 to 39 years, and the majority (52%) reported sexual contact as their route of transmission.

Some studies have shown that demographic characteristics of people living with HIV influence both perceived social support and disease coping[36,20]. Reports, however, vary regarding the correlated demographic features.

In the present study, reported route of HIV transmission was the only category that was significantly related with both social support and coping scores. This finding was consistent with an earlier study which showed that participants who reported a history of intravenous drug use were more likely to use confrontive methods of coping[37]. The role of factors leading to drug use or unsafe sexual acts and hence to reported routes of transmission, should be underscored as they are remarkable in addressing psychological problems, social support as well as coping strategies.

Patients with higher monthly income and educational levels have higher total coping scores; while married patients have higher social support scores. These findings contradict the results of some studies that showed no difference in outcome scores along marital status, level of education, or transmission route[29,32]. Yet in a

study investigating the quality of life among HIV-infected patients, significant differences between men and women were pointed out; widowed, divorced or single females had lower scores compared to married females, but marital status was not a main predictor among men. Additionally, having higher educational level was correlated with better health quality of life among all participants[38].

Various gender-specific strategies are also reportedly used by patients. Our study, however, did not reveal any major differences between men and women in the implementation of coping strategies or reports of perceived social support. Earlier work has proposed that men and women are specifically different in use of self-control and confrontative coping, and also avoidance-based strategies[39]. Men are more likely to get passive aggressive towards stressful situations, and displace their anger towards their family members[13,40]; another study reported that men tried to handle stress by smoking, binge drinking, illicit drug use, or even participants in higher risk behaviors[41]. On the contrary, women were more likely to keep away from family members to avoid being blamed; experience anxiety and depressive feelings, and hence perceive lower social support; while social support was correlated with greater psychosocial benefits for HIV infected men[36,41,42]. We suggest that these differences reflect societal norms that are not separable from the pattern of spread of HIV, and of coping with the disease. The traditional construct of the society appreciating the presence of “family” and it’s “divinity”, despite being a virtue in supporting affected patients may contribute to the new wave of HIV in Iran. We propose that the higher perceived social support among those patients who did not report their transmission route (by choosing the option “others”) could be due to the stigma in families that prevent people from disclosing their disease status. Other studies in Iran have demonstrated that HIV stigma in Iran is very critical because many patients mentioned that in the care providers’ fear of becoming infected was a main cause of stigma against the patients. In addition, many negative attitudes and beliefs exist regarding drug abuse, prostitution, infidelity and homosexuality. However, as long as infected people do not seek care in the medical facilities for fear of facing social stigma, many infected patients will remain undetectable[23].

Also in a previous study in Iran, it was indicated that being male resulted in higher levels of perceived social support[25], but we point out that different questionnaires were used in the some studies; we believe that the medical outcomes study: social support survey questionnaire could be more compatible with the present epidemiologic context of HIV in Tehran city, a capital housing population groups migrating from other parts of the country, and the variability of ethnical groups visited at a major referral center[16, 25].

This study provides important evidence on the significant positive association between perceived social support and disease coping. Furthermore, there seem to be differences in implementation of coping styles in the presence of various subcategories of social support. Informational support is a major area of significance focus on future interventions that aimed at targeting HIV disease

coping in stigmatized societies. We also suggest that the profound influence of stigma predominates gender differences and this could be further explored in future research. We recommend that public health providers and HIV/AIDS professionals consider additional interventions to promote psychosocial health in HIV infected patients with regard to socio-economic and other demographic differences.

Conflict of interest statement

We declare that we have no conflict of interest.

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