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Research

***Corresponding author**
Taisuke Togari, PhD, RN, PHN
Department of Liberal Arts
The Open University of Japan
2-11 Wakaba, Mihama-ku
Chiba 261-8586, Japan
E-mail: ttogari@ouj.ac.jp

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Virtual and Real Social Support Networks in Mental Health of Japanese HIV-Positive Men: Nationwide HIV/AIDS Web Research

Taisuke Togari, PhD, RN, PHN[1*]; Yoji Inoue, PhD, RN, PHN[1]; Yosuke Takaku, BEc[2]; Sakurako Abe, PhD, RN, PHN[3]; Rikuya Hosokawa, MHSc, RN, PHN[4]; Takashi Itagaki, BHSc[5]; Sachiko Oki, PhD, RN, PHN[6]; Naoko Katakura, PhD, RN, PHN[7]; Chihiro Wakabayashi, MHEc[8]; Takashi Yajima, BEc[2,9]

[1]Department of Liberal Arts, The Open University of Japan, 2-11 Wakaba, Mihama-ku, Chiba 261-8586, Japan

[2]Japan Network of People Living with HIV/AIDS, 1-21-12-103, Hyakunincho, Shinjyuku-ku, Tokyo 169-0073, Japan

[3]Division of Health Administration, TIS Inc., 2-11-1, Nagatacho, Chiyoda-ku, Tokyo 100-6150, Japan

[4]School of Nursing, Nagoya City University, 1 Kawasumi, Mizuhocho, Mizuho-ku, Nagoya 467-8601, Japan

[5]Accelight Inc., 4-1-5-5, Hongo, Bunkyo-ku, Tokyo, Japan

[6]Faculty, Department of Nursing, Kyorin University, 6-20-2, Shinkawa, Mitaka 181-8611, Japan

[7]Kobe City College of Nursing, 3-4, Gakuen-nishimachi, Nishi-ku, Kobe 651-2103, Japan

[8]Department of Health Sciences, Saitama Prefectural University, 820, Sannomiya, Koshigaya 343-8540, Japan

[9]Place Tokyo, 4-11-5-403, Takadano-baba, Shinjuku-ku, Tokyo 169-0075, Japan

ABSTRACT

Background: This cross-sectional study examined the effects of face-to-face (real) and virtual social support networks on the mental health status of Japanese HIV-positive males.
Method: A nationwide online cross-sectional survey was conducted by HIV Futures Japan project from July 2013 to February 2014: 1,095 responses were obtained, and we analyzed those of 879 not females. Two subscales of the Hospital Anxiety and Depression Scale (HADS) were measured in depressive and anxiety tendencies.
Results: The mean (SD) scores for depressive and anxiety tendencies were 8.1 (4.2) and 8.6 (4.8), respectively (the range was 0-21). Hierarchical regression analysis showed that virtual-support networks did not display direct effects on depressive and anxiety tendency. “No one”, “only one” and “two to three” in the real-support network showed significant relations compared to “20 or more” (B=2.76, 1.86, 1.46, respectively. 95% CIs [1.35, 4.17], [0.28, 3.44], [0.10, 2.82], respectively) to the depressive tendency. With anxiety tendency, “no one”, “only one” and “two to three” in the real-support network showed a significant relation compared to “20 or more” (B=2.42, 2.04, 1.61, respectively. 95% CIs [0.83, 4.00], [0.27, 3.81], [0.08, 3.14], respectively).
Conclusions: It is necessary to develop face-to-face social support systems to promote mental health among people living with HIV/AIDS.

KEYWORDS: Social support; Mental health; Virtual-support network; HIV/AIDS, Japan.

ABBREVIATIONS: HADS: Hospital Anxiety and Depression Scale; PLHIV: People living with HIV; WHO: World Health Organization; QoL: Quality of Life.

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INTRODUCTION

Since 2007, around 1,500 new HIV/AIDS patients have been reported annually in Japan. According to the National Institute of Infectious Disease, the number of HIV/AIDS patients in the country was 23,000 in 2013.

People living with HIV (PLHIV) have to suffer internalized stigma.[1] This stigma causes stress, affects their mental health,[2] and presents a long-standing problem for care of PLHIV. Gay PLHIV are subject to social segregation, rejection in their relationships, and social withdrawal.[3] The World Health Organization (WHO) quality of life (QoL) group has underlined the importance of social inclusion for PLHIV.[4] Positive social support for PLHIV is reflected in a good mental health status,[5] medication adherence,[6] and appropriate risk behavior.[7]

In recent years, personal connections *via* the Internet have grown alongside the development of social networking services. Social support has increasingly adopted the form of virtual communities and electronic support groups.[8] Social support in online communities currently has a similar level of acceptance to that in face-to-face situations.[9]

The aim of the present study was to examine how face-to-face (real) and virtual social support networks for HIV/AIDS are related to mental health status in Japanese HIV-positive males.

METHODS

Subjects and Methods

In this cross-sectional study, we used data from a national online survey conducted by HIV Futures Japan from July 2013 to February 2014. The HIV Futures Japan national survey was performed as part of the HIV Futures Japan project, which is intended to help realize healthy, independent lifestyles and create a liveable social community for HIV-positive individuals.[10] In Japan, there have been many surveys that measured medicinal and curative aspects. Moreover, there have not developed adequately HIV sero-positive registration system in Japan. However, that research did not include aspects of members of the general population living with HIV/AIDS. Therefore, a multidimensional and multidisciplinary survey for HIV-positive individuals was needed.

The questionnaire in this survey was composed of the following large categories: (1) about yourself (socio-demographic items), (2) health status, (3) medicine, (4) sexual health, (5) substance use and addiction, (6) having children, (7) social relations, (8) mental health, (9) social welfare/health management and (10) others. The survey posted online based on self-reported HIV infection, and subjects were recruited in 2 ways. First, we set up online links and banners to promote the survey site. We began by placing links on general sites directed at HIV-positive individuals; we also included links to sites for HIV-prevention groups, sites for HIV-positive groups, social networking sites for HIV-positive participants, and so on. Second, we distributed the fliers at medical facilities, HIV-related events, and meetings of HIV-prevention groups and support groups.

After excluding incomplete answers, we obtained responses from 1095 individuals. We determined 913 responses to be valid, and we subjected these to analysis. The survey participants were resident in 46 of Japan's 47 prefectures (the exception was Tottori).

Of the valid responses received, 879 subjects remained for analysis after we excluded females. Descriptive statistics of subjects were shown in Table 1. The mean age of the participants was 38.2 years (standard deviation [SD], 8.1 years); the average number of years since testing positive for HIV was 5.9 years (SD, 4.9 years).

Variables

Virtual- and real-support network for HIV/AIDS: In the survey, we inquired whether participants were able to talk about HIV/AIDS online (virtual support) and whether they were able to speak about it directly (real support). We defined each 6 categories: (1) no one; (2) only 1; (3) 2-3; (4) 4-9; (5) 10-19; and (6) 20 or more.

Mental health status: We assessed mental health status by means of the HADS.[11] This scale comprises 2 subscales-depression and anxiety. Each subscale is made up of 7 items assessed on a five-point Likert scale. Cronbach's alpha coefficients are 0.75 for the depression subscale and 0.85 for the anxiety subscale.

Demographics and time since HIV infection: In the survey, we inquired about age, sexual orientation (gay, bisexual, heterosexual, other) and number of years since HIV infection.

Analysis

We used the depression and anxiety subscales as continuous variables for depressive and anxiety tendencies. We performed a multiple regression analysis estimated by restricted maximum-likelihood method, in which the dependent variables were depressive tendency and anxiety tendency; the independent variables were age, sexual orientation, number of years since HIV infection, virtual-support network, and real-support network. In the hierarchical regression model (model 1), the independent variables were age, sexual orientation, number of years since HIV infection and the virtual-support network. In model 2, the real-support network was added to model 1. All statistical analysis were performed using IBMSPSS, version 19.0 (IBM Corporation).

RESULTS

The mean (SD) scores for depressive and anxiety tendencies were 8.1 (4.2) and 8.6 (4.8), respectively (the range was 0-21). Score distributions by categories were shown in Table 1.

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	n	(%)	Depression score			Anxiety score		
			Mean	(SD)	*p*[a]	Mean	(SD)	*p*[a]
Sexual orientation					.896			.201
gay	717	(81.6)	8.1	(4.3)		8.5	(4.8)	
bisexual	50	(5.7)	8.5	(4.3)		8.9	(4.6)	
heterosexual	95	(10.8)	7.9	(3.7)		8.9	(4.4)	
other	17	(1.9)	8.1	(4.4)		10.0	(6.4)	
Virtual-support network on HIV/AIDS					.048			.239
no one	441	(50.2)	8.4	(4.4)		8.6	(4.8)	
only one	40	(4.6)	8.0	(4.0)		8.9	(4.8)	
two to three	182	(20.7)	8.1	(4.2)		8.9	(4.6)	
four to nine	85	(9.7)	8.0	(4.0)		9.0	(4.8)	
10–19	44	(5.0)	7.4	(3.4)		8.0	(4.5)	
20 or more	82	(9.3)	6.9	(4.2)		7.4	(4.8)	
Real-support network on HIV/AIDS					<.001			.001
no one	199	(22.6)	9.3	(4.3)		9.3	(4.6)	
only one	93	(10.6)	8.3	(4.7)		9.0	(4.9)	
two to three	309	(35.2)	8.0	(3.9)		8.7	(4.6)	
four to nine	143	(16.3)	7.8	(3.9)		8.4	(4.8)	
10–19	65	(7.4)	7.2	(4.5)		7.5	(5.2)	
20 or more	66	(7.5)	6.5	(4.3)		6.6	(4.8)	
Age	38.2	(8.1)[b]	-0.015[c]			-0.187[c]		
Number of years since HIV infection	6.9	(4.9)[b]	-0.045[c]			-0.133[c]		

[a]F-test in one-way ANOVA
[b]mean (SD)
[c]Pearson's product-moment correlation coefficient

Table1: Descriptive statistics and destribution of depression and anxiety score (n=879).

Table 2 presents the results of hierarchical regression analysis. In terms of depressive tendency, "no one" and "two to three" in the virtual-support network showed significant relations in model 1, (B=1.65, 95% CI [0.63, 2.67], B=1.29, 95% CI [0.16, 2.42]), though there was no significant relation in model 2. "No one", "only one" and "two to three" in the real-support network showed significant relations (B=2.76, 1.86, 1.46, respectively. 95% CIs [1.35, 4.17], [0.28, 3.44], [0.10, 2.82], respectively) to the depressive tendency in model 2.

With anxiety tendency, however, the virtual-support network evidenced no significant relation in models 1 and 2. "No one", "only one" and "two to three" in the real-support network showed a significant relation (B=2.42, 2.04, 1.61, respectively. 95% CIs [0.83, 4.00], [0.27, 3.81], [0.08, 3.14], respectively) to depressive tendency in model 2.

DISCUSSION

We found that the mechanisms related to the social support network for HIV/AIDS differed with respect to depression and anxiety. In the case of depression, virtual social support was indirectly related to depression mediation by the real-support network. However, the virtual-support network showed no relation in the case of anxiety; only the real-support network displayed a relation with respect to anxiety.

This study shows that virtual support did not have a direct effect on mental health. In contrast to online support groups, Setoyama et al[9] identified a high degree of emotional insight as part of the peer support function in face-to-face support groups. The authors believed this to be possibly the result of participants being able to establish a closer relationship with other group members in face-to-face support. As elsewhere in the world,[12] Japanese PLHIV are subject to severe mental health problems. In this research conducted by HIV Futures Japan, we found high proportion of high-risk depressive (28.7%) and anxiety (33.1%) disorders which are higher than those in the general Japanese population.

Also, a social phenomenon called 'AIDS panic' occurred in 1990's Japanese society. Research which was conducted to find quality of life of medically induced PLHIV in Japan reported a lot of felt stigmas were in Japanese PLHIV at that time, and these were related to social isolation and negative mental health.[13] In this HIV Futures Japan survey, we found almost Japanese PLHIV still remain in having felt stigma. For example, 35% of participants answered "*Since I am HIV+, I hardly interact with others*". It is therefore necessary to provide emotional support to promote the mental health status of PLHIV.

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	Depression tendency						Anxiety tendency					
	Model 1			Model 2			Model 1			Model 2		
	B	(95% CI)	p	B	(95% CI)	p	B	(95% CI)	p	B	(95% CI)	p
Intercept	6.32	(3.58 9.06)	<.001	5.25	(2.41 8.09)	<.001	12.46	(9.41 15.52)	<.001	11.45	(8.26 14.64)	<.001
Virtual-support network on HIV/AIDS												
no one	1.65	(0.63 2.67)	.002	0.52	(-0.68 1.73)	.395	0.79	(-0.34 1.93)	.171	-0.35	(-1.70 1.01)	.616
only one	1.24	(-0.39 2.88)	.136	0.20	(-1.58 1.97)	.828	0.53	(-1.29 2.35)	.568	-0.62	(-2.62 1.37)	.539
two to three	1.29	(0.16 2.42)	.025	0.41	(-0.90 1.72)	.540	1.01	(-0.24 2.27)	.114	0.06	(-1.41 1.54)	.934
four to nine	1.24	(-0.06 2.54)	.062	0.57	(-0.86 1.99)	.437	1.14	(-0.32 2.59)	.125	0.39	(-1.22 1.99)	.635
10–19	0.61	(-0.95 2.17)	.442	0.12	(-1.55 1.79)	.889	0.24	(-1.49 1.98)	.782	-0.29	(-2.17 1.59)	.764
20 or more	ref.			ref.			ref.			ref.		
Real-support network on HIV/AIDS												
no one				2.76	(1.35 4.17)	<.001				2.42	(0.83 4.00)	.003
only one				1.86	(0.28 3.44)	.021				2.04	(0.27 3.81)	.024
two to three				1.46	(0.10 2.82)	.035				1.61	(0.08 3.14)	.039
four to nine				1.28	(-0.14 2.70)	.077				1.29	(-0.30 2.89)	.113
10–19				0.77	(-0.76 2.30)	.322				0.51	(-1.20 2.23)	.558
20 or more				ref.						ref.		
-2 Restricted Log Likelihood	4957.56			4913.74			5140.82			5109.56		

All models were adjusted for age, number of years since HIV infection and sexual orientation.
CI: confidential interval
[a]fixed effect model estimated by restricted maximum-likelihood method

Table 2: Hierarchical multiple regression analysis about effects of virtual and real support networks on mental health.

This study has the following implications. It is necessary to establish face-to-face support systems to promote mental health among PLHIV. To reduce depressive tendencies, it is important that virtual support systems for HIV/AIDS be designed to facilitate the creation of face-to-face support networks.

This study has a number of limitations. First, we relied on online survey data, which limited participants to those with access to the Internet, such as individuals with smart phones or personal computers, and that may have led to selection bias. It would be appropriate to confirm the generalizability of our findings by comparing our online survey results with those acquired by other means, such as from mailed surveys. Second, this was a cross-sectional study. It is therefore necessary to clarify the relationships among the studied factors using a vertical study design through follow-up surveys. Finally, we did not examine the various kinds of social support, such as instrumental and emotional: such aspects should be measured and analyzed in future research.

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CONFLICTS OF INTERESTS

The authors declare that they have no conflicts of interest.

CONSENT

This study was approved by Open University of Japan Research Ethics Committee (No. 2013-5) and Osaka National Hospital Institutional Review Board (IRB) (No. 13-037).

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