Social Support and Emotional Intelligence of Thai HIV-Affected Adolescents and Their Stress and Alcohol Use

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Abstract

There are many concerns about mental and behavioral problems of adolescents having HIV-infected parents (or "HIV-affected adolescents"). This study identifies associations of perceived social support and emotional intelligence of HIV-affected adolescents aged 12-17 years in Thailand with their stress and alcohol use. This study used follow-up data from 173 Thai HIV-affected adolescents and their parents at baseline, 6, 12, 18, and 24 months. Exploratory factor analysis was conducted to develop indicators of adolescents' perceived social support. Bivariate correlation and multilevel model analyses were used to examine predictors of adolescents' stress and alcohol use. While the males reported having a higher number of close friends, greater frequency of calling friends and more social activities than the females, they have less frequency of friend visiting activities. HIV-affected adolescents having higher emotional intelligence reported lower level of stress and less alcohol drinking in the past 30 days. Higher frequency of having alcohol drinking was positively associated with larger friend network and more social activities. Based on the findings, intervention to reduce stress and alcohol drinking among the adolescents needs to address how to improve emotional intelligence and constructive friend and social activities.

Keywords: social support, emotional intelligence, stress, alcohol use, HIV-affected adolescent, Thailand

Introduction

Despite being regarded as one of the most successful countries in confronting the HIV/AIDS epidemic, Thailand is still facing increasing HIV infection rates in some subpopulations particularly in the north and the northeast.[1-3] A large number of HIV-affected families has been estimated in Thailand.[4] Without knowing the exact number of children of people living with HIV/AIDS (PLH), some studies suggested that more than two-thirds of HIV infected adults are married and most couples have 3-4 children.[5,6]

Adolescent children in families whose their parents are infected or have died from HIV/AIDS (or "HIV-affected adolescents") have a higher risks for mental and behavioral health problems compared with general (non HIV-affected) adolescents.[7,8] HIV-infected parent's behavior is found to be the primary determinant of children's adjustment to their parents' infection. HIV-infected people also tend to have pre-existing and long-standing stressors such as poverty, substance abuse and violence.[9,10]

Stress refers to the consequences of the failure of an individual to respond appropriately to emotional or physical threats, whether actual or imagined.[11] Adolescent children of HIV-infected parents are likely to experience high levels of stress.[12-15] Some studies have demonstrated that adolescents of HIV-infected parents tend to have higher risk for substance abuse. In parallel to substance abuse, frequent and early sexual risk behaviors in adolescents are associated

with high levels of emotional distress and low parental monitoring.[16,17]

HIV infection may also be associated with depression, and children of depressed parents are known to be at risk for alcohol and drug abuse in late adolescence and early adulthood.[18,19]

Social support, in social psychology, is defined as "the existence or availability of people on whom we can rely, people who let us know that they care about, value, and love us".[20] The role of perceived social support and mental and behavioral outcomes has been identified among HIV-infected adolescents. It was demonstrated that higher levels of social support are positively associated with lower levels of depression and conduct problems.[21,22]

Emotional intelligence is defined as an individual's ability to monitor one's own and others' emotions, to discriminate between the positive and negative effects of emotions and to use emotional information to guide one's thoughts and actions.[23] Emotional intelligence also reflects the ability of an individual for understanding and managing his/her own emotion, including social skills, and regarded as one supporting factor for a fulfilled life.[24,25] It has been demonstrated that emotional intelligence consistently predicts positive social well-being and academic outcomes in children.[26-28]

Although some studies in the US have suggested a positive effect of perceived social support of HIV-affected adolescents and their lower psychological difficulties such as depressions, its effect on risky behaviors such as substance use and sexual behavior, as well as everyday stress, is yet to be identified particularly in culturally-different areas such as Thailand. This study, therefore, examines associations of perceived social support and emotional intelligence of HIV-affected adolescents aged 12-17 years in Thailand with their stress and alcohol use.

Methods

Study Design and Participants

This study used the data set from a two-year follow-up, randomized, controlled family intervention trial in Thailand.[29,30] These data were collected during 2007-2010 from four district hospitals (two from the north region and two from the northeast region). Families in the study areas with at least one HIV-infected parent, one adult care-giver, and one school-age child were screened. Only families of PLH who had already disclosed their HIV status to their adult caregivers and adolescent children aged 12-17 years were eligible and invited to participate in the study. After the process of enrollment and informed consent, 204 families had adolescent children aged 12-17 year who were the target of this study. Of those 204 families, 173 (85%) completed a 5-visit follow-up, i.e. at 0 (baseline), 6, 12, 18, and 24 months.

Data Collection

The data were collected by trained interviewers at each district hospitals using a self-administered questionnaire (Computer Assisted Personal Interview) to assess several characteristics of adolescents aged 12-17 years and their PLH parents. A total of 173 adolescents aged 12-17 years and 173 PLH parents were included in this study.

Measurements

Outcome variables

Stress of adolescents was assessed by using a standardized measurement called the "Everyday Stress Index (ESI): Thai adolescent version". In this instrument, there are 26 items asking about common concerns of adolescents with a score ranging from 26 to 104. The measurement was developed by Department of Mental Health, Thai Ministry of Public Health.[31] The measurement had satisfactory internal consistency (Cronbach's alpha = 0.85).

Substance use of adolescents was assessed by using the standardized measurement developed by the US Centers for Disease Control and Prevention. The measurement used in the "Youth Risk Behavior Surveillance System" included 9 questions regarding alcohol and other drug use behaviors.[32] The focus of this study was alcohol use of the adolescents

Sexual behavior of adolescents was assessed using a standardized measurement developed by the US Centers for Disease Control and Prevention. The "Youth Risk Behavior Surveillance System" included 6 questions regarding sexual behaviors.[32]

Predictor variables

Perceived social support of adolescents was assessed using questions adapted from the standardized measurement called the "Medical Outcomes Study (MOS) Social Support Survey".[33] To measure perceived social support of the adolescents more comprehensively, this

study developed new weighted combination scales from three related measures: 1) size of social support mentioned above, 2) caring parenting style score measured using the "Parental Bonding Instrument (PBI): Thai version" which was adapted from the Parental Bonding Instrument developed by Parker and colleagues, 3) plus additional three questions from the standardized measurement, the "Thai Emotional Quotient (Thai EQ) 12-17" asking about opinion concerning acceptance of receiving support from others and about long-time close friends.[34,35] The new two scales were developed and classified into two dimensions: 1) Parental support and personal trait, and 2) Friend network and social activity. Higher scores of both scales suggest higher level of each supportive dimension.

Emotional intelligence of adolescents was assessed using the standardized measurement, the "Thai Emotional Quotient (Thai EQ) 12-17". There are 52 items and the higher scores suggest higher emotional intelligence.[35]

Other covariates

The collected demographics included age in years and gender of the adolescents, and age in years and educational level (primary school or less vs. above primary school) of PLH parents. Self-esteem of adolescents was assessed by using a standardized instrument, the "Rosenberg Self-Esteem Scale".[36] Intervention status of their families and follow-up visit was also included in the regression analysis.

Data Analyses

For the purpose of this study, only the data of adolescents who completed all 5-visits follow-up was analyzed. Exploratory data analysis was conducted. Each measurement and characteristic of interest at baseline was described in terms of mean (and standard deviation) or number (and percentage) according to types of variables (i.e. continuous or categorical variable respectively). Cronbach alpha coefficient was calculated to verify internal consistency of measurement scale. Characteristics between genders were compared using the two-sample t-test (for continuous variables) or Chi-square test (for categorical variables). Pearson correlation coefficients were analyzed to verify bivariate interrelationships among measurements.

Exploratory factor analysis was performed to generate two scales of important dimensions regarding perceived social support from the three related measures mentioned above. The principal component analysis method was used for initial extraction and oblique rotation (direct quartimin procedure) was conducted to identify the best variable combination scales. Standardized factor score assigning was done using a regression procedure.

Multilevel regression models were used to estimate associations between outcomes of interest and their potential predictors and covariates due to hierarchical structure of the dataset (i.e. five observations over two years of each adolescent who were from four communities). Potential variables to be included in the final models were selected based on prior knowledge, statistical criteria, and subjective interest. Follow-up visit was also included in the model as indicator variables to assess potential associations between outcomes and time of follow-up. For selection of the final model, best subset regression with forcing of some important variables was performed. Standardized coefficients and *p*-values are reported for continuous outcomes. Adjusted odds ratios and 95% confidence intervals (95% CI) are reported for dichotomous outcomes.

All statistical analyses were conducted with R software.[37]

Ethical Approval

This study was reviewed and approved by Institutional Review Boards of the University of California at Los Angeles, and the Thailand Ministry of Public Health Ethical Review Committee for Research in Human Subjects.

Results

Of those 204 families with adolescent children aged 12-17 year, 173 (85%) completed 5-visit follow-ups and were analyzed in this study. There is no significant difference in important baseline characteristics (including age, gender, everyday stress index, alcohol, smoking and sexual behaviors) between those 173 families retained and 31 families loss to follow up. Baseline characteristics of 173 HIV-affected adolescents and their PLH parents are illustrated in Table 1. About 57% of the 12 to17-year-old adolescents were female. The average age of the adolescents was 13.8 years (standard

Table 1. Baseline characteristics of HIV-affected adolescents and their PLH parents, Thailand

Characteristics	Total (N = 173) N (%)	Female (N =98) N (%)	Male (N = 75) N (%)	*p*-value
Adolescents				
Age*	13.8 (1.5)	14.0 (1.6)	13.5 (1.4)	0.026
Study site				0.240
Site 1	63 (36.4)	34 (34.7)	29 (38.7)	
Site 2	37 (21.4)	19 (19.4)	18 (24.0)	
Site 3	38 (22.0)	27 (27.6)	11 (14.7)	
Site 4	35 (20.2)	18 (18.4)	17 (22.7)	
Stress (α=0.85)*	38.7 (10.7)	38.8 (9.6)	38.7 (11.9)	0.942
Ever drunk alcohol	55 (31.8)	36 (36.7)	19 (25.3)	0.111
Ever smoked cigarette	27 (15.8)	16 (16.7)	11 (14.7)	0.722
Ever had sexual intercourse	33 (19.1)	20 (20.4)	13 (17.3)	0.610
Number of close friends and close relatives*	3.7 (2.8)	3.3 (2.5)	4.3 (3.0)	0.018
Number of social activities from your home past week*	2.9 (2.6)	2.4 (1.9)	3.5 (3.2)	0.008
Number of times you spoke with friends on the phone past week*	2.8 (2.4)	2.4 (2.0)	3.2 (2.8)	0.046
Number of times visiting friends' houses/your friends visited your house*	3.3 (4.1)	4.2 (4.3)	2.3 (3.4)	0.004
Having at least one best friend	163 (94.2)	92 (93.9)	71 (94.7)	0.826
Self-esteem (α=0.67)*	28.9 (2.8)	28.8 (2.5)	29.0 (3.2)	0.739
Emotional intelligence (α=0.83)*	152.1 (15.6)	151.7 (15.5)	152.6 (15.9)	0.728
Parents				
Age	39.4 (5.7)	39.1 (5.4)	39.8 (5.9)	0.372
Female gender	127 (73.4)	69 (70.4)	58 (77.3)	0.307
Highest education				0.373
Primary school or less	145 (83.8)	80 (81.6)	65 (86.7)	
Above primary school	28 (16.2)	18 (18.4)	10 (13.3)	
Received intervention	100 (57.8)	57 (58.2)	43 (57.3)	0.913

Note: *mean (standard deviation)

deviation [s.d.] = 1.5). The mean of everyday stress index scale was 38.4 (s.d. = 10.7). Among 173 adolescents, 55 (31.8%) reported that they had ever drunk alcohol in their lifetime, 25 (17.8%) reported that they had ever smoked cigarette in their lifetime. For sexual behavior, 33 (19.1%) adolescents reported that they had ever had sexual intercourse in their lifetime. Of note, although not statistically significant, female adolescents had higher proportion of engaging in all of the above unfavorable behaviors than male adolescents in this study Male adolescents reported significantly higher number of close friends, number of social activities away from house, and number of phone calls to their friends than did female adolescents. However, female adolescents reported significantly a higher number of times visiting friends' houses or being visited by friends at their houses than did male adolescents. The self-esteem of the adolescents had a mean of 28.9 (s.d. = 2.8). The average emotional intelligence was 152.1 (s.d. = 15.1). For the PLH parents of those adolescents, average age was 39.4 (s.d. = 5.7) and 73.4% of them were female. Only 16.8% of these parents had completed an education level above primary school.

Table 2 outlines the standardized factor scores for perceived social support of the adolescents using exploratory factor analysis. Factor 1 had more weights on caring parenting style (item 5) and adolescents' characteristics concerning receiving support (items 6-8) with scoring coefficients ranging from 0.33 to 0.39. Factor 2

Table 2. Scoring coefficients for social support and related variables from exploratory factor analysis

Item	Description	Factor 1	Factor 2
1.	No. close friends and close relatives	-0.004	0.284
2.	No. of social activities from you home past week	-0.032	0.492
3.	No. of times you spoke with friends on the phone past week	-0.044	0.448
4.	No. of times you visited friends' homes/your friends visited your home	0.135	0.232
5.	Caring parenting style	0.334	-0.091
6.	Do you think it is worth in sympathy that others display towards me	0.368	-0.071
7.	Do you think you can easily make acquaintances with others	0.389	0.0004
8.	Do you think you have many close friends that you have known for a long time	0.379	0.03642
	variance explained	1.79	1.70
	percentage	22.3	21.3

had more weights on number of close friends and close relatives (item 1) and numbers of contacts or social activities (items 2-4). Adolescents' scoring coefficients ranged from 0.23 to 0.49. Since the exploratory factor analysis was conducted to identify "hidden" dimensions (or aspects) of social support measures, the findings in Table 2 indicated that factor 1 and factor 2 represented two different dimensions of social support. Factor 1 can be seen as the main combination of parental support and personal trait while factor 2 is highly focused on friend network and social activity. In the following analyses, factor 1 and factor 2 will be used as two single variables representing the two relevant dimensions mentioned above.

Bivariate correlations among stress, factor 1, factor 2, emotional intelligence, self-esteem, and age in years are presented in Table 3. Stress was negatively correlated with the factor 1 ($r = -0.25$, $p = 0.003$) and emotional intelligence ($r = -0.19$, $p = 0.02$) but was positively associated with self-esteem ($r = 0.18$, $p = 0.02$). We found that adolescent with higher levels of factor 1 reported a higher level of emotional intelligence ($r = 0.62$, $p < 0.001$) and self-esteem ($r = 0.36$, $p < 0.001$). A positive association between age and the factor 1 ($r = 0.18$, $p = 0.02$) was observed. Lastly, there was a positive association between emotional intelligence and self-esteem ($r = 0.42$, $p < 0.001$)

Table 3. Bivariate correlations among characteristics of interest at baseline

Characteristics	1	2	3	4	5	6
1. Stress	1					
2. Social support factor 1: parental support and personal trait	-0.25*	1				
3. Social support factor 2: friend network and social activity	0.03	-0.05	1			
4. Emotional intelligence	-0.19*	0.62**	-0.05	1		
5. Self-esteem	0.18*	0.36**	-0.10	0.42**	1	
6. Adolescent's age	0.04	0.18*	0.07	0.03	0.03	1

Note: *$p < 0.05$, **$p < 0.001$

Table 4. Associations of everyday stress* with perceived social support, emotional intelligence, and self-esteem among HIV-affected adolescents over five-visit follow-up (at baseline, 6, 12, 18, and 24 months) from the multilevel model**

Correlates	Standardized coefficient	*p*-value
Social support factor 1: parental support and personal trait	0.02	0.699
Social support factor 2: friend network and social activity	0.01	0.654
Emotional intelligence	-0.19	<0.001
Self-esteem	-0.05	0.132
Adolescent's gender	0.00	0.984
Adolescent's age	0.12	0.013

Note: *Logarithmic transformed

**Other covariates in the models included age and educational level of PLH parents, and intervention status*

Table 4 presents the multilevel regression model examining the association between stress of the adolescents and potential predictors. After controlling for age and gender of the adolescents, age and educational level of PLH parents, and intervention status, we found a significant negative association between stress and emotional intelligence (standardized coefficient [b] = -0.19, *p* <0.001). Adolescents higher age were reported significantly higher stress (b = 0.12, *p* = 0.01).

The multilevel model for alcohol drinking was demonstrated in Table 5. When controlling for age and gender of the adolescents, age and educational level of PLH parents, and intervention status in the model, we found that adolescents with higher emotional intelligence were less likely to report drinking alcohol in past 30 days (adjusted OR = 0.96, 95% CI = 0.93-0.98). But level of friend network and social activity was positively associated with alcohol drinking in past 30 days (adjusted OR = 1.88, 95% CI = 1.33-2.66). Finally, significant positive association between alcohol drinking and adolescents' age was observed (adjusted OR = 1.83, 95% CI = 1.45-2.31). We did not see any significant association between follow-up time

Table 5. Associations of alcohol drinking* with perceived social support, emotional intelligence, and self-esteem among HIV-affected adolescents over five-visit follow-up (at baseline, 6, 12, 18, and 24 months) from the multilevel model**

Correlates	Odds ratio	95% Confidence interval	
		Lower	Upper
Social support factor 1: parental support and personal trait	1.32	0.88	1.97
Social support factor 2: friend network and social activity	1.88	1.33	2.66
Emotional intelligence	0.96	0.93	0.98
Self-esteem	1.06	0.93	1.20
Adolescent's gender	1.47	0.72	3.04
Adolescent's age	1.83	1.45	2.31

Note: *Having at least one drink of alcohol in past 30 days

**Other covariates in the models included age and educational level of PLH parents, and intervention status*

and outcomes of interest, i.e. stress and alcohol drinking, therefore the indicator variables of follow-up visit were excluded from the final multilevel model presented in Table 4 and Table 5.

Discussion

To our knowledge, no empirical data about stress, substance use and sexual behavior of Thai HIV-affected adolescents has been documented to date. This present study is one of the first studies that explored those mental and behavioral factors and their associations with perceived social support and emotional intelligence of HIV-affected adolescents in Thailand. We found that emotional intelligence predicts adolescent's stress and alcohol consumption behavior. From our study, HIV-affected adolescents having higher emotional intelligence reported a lower level of stress and less alcohol drinking. These findings are consistent with the theory that emotional intelligence influences the ability of individuals to monitor and manage their own feeling and cope when confronting with stressors.[38,39] Some researchers demonstrated that emotional intelligence was negatively associated with substance uses, including alcohol and tobacco, among adolescent in the US. They also proposed that adolescents with high emotional intelligence might have better mental ability to read other persons' mental or emotional status and therefore can avoid unwanted pressure from their friends.[40]

Our study also identified some differences in sizes of friend network and social activities between female and male adolescents. While male adolescents reported having higher number of close friends, times speaking with friends on the telephone and number of social activities outside their houses when compared with females, they had less frequency of friend visiting activities (i.e. visiting friends' houses or being visited by their friends). This finding indicates the different nature of social activities between Thai female and male adolescents and may have practical implications if public health officers wish to design supportive interventions for HIV-affected adolescents through peer-assisted strategies. Additionally, based on multilevel model analysis, higher frequency of alcohol drinking was positively associated with increasing score of friend network and number

of social activities. This finding is consistent with the past study in Thailand which observed that alcohol consumption behavior of university students was significantly associated with peer drinking, relatives drinking, accessibility of alcohol in the surrounding community, and other predictors.[41]

As with other research, a few limitations in this present study should be noted. Firstly, the samples were drawn from PLH families who had disclosed their status and might not represent all HIV-affected families in Thailand. Additionally, because of non-randomized nature of observational data, retrospective data collection, complex relationship of characteristics of interest, and covariate-outcome across follow-up time, a causal relationship cannot be established. However, by using repeated observations on the same person over five visits, instead of analyzing one-visit data cross-sectionally, we can reduce confounding by unmeasured time-constant individual characteristics.

Conclusions and Recommendations

In sum, this study underscored the role of emotional intelligence as an important predictor of Thai HIV-affected adolescent stress and alcohol drinking. Furthermore, size of friend network and social activities are also related to alcohol drinking. As stress and alcohol drinking are not uncommon challenges in adolescents particularly ones living in HIV-affected families, intervention aiming to improve emotional intelligence and constructive friend and social activities could be beneficial to HIV-affected adolescents.

Acknowledgements

Suggested Citation

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