



Received: 24 June 2016  
Accepted: 16 December 2016  
Published: 03 January 2017

\*Corresponding author: Padmore Adusei Amoah, Department of Sociology and Social Policy, Lingnan University, Tuen Mun, Hong Kong (SAR)  
E-mails: [padmoreaduseiamoah@ln.edu.hk](mailto:padmoreaduseiamoah@ln.edu.hk), [padmoreamoah@yahoo.com](mailto:padmoreamoah@yahoo.com)

Reviewing editor:  
Albert Lee, The Chinese University of Hong Kong, Hong Kong

Additional information is available at the end of the article

## PUBLIC HEALTH | RESEARCH ARTICLE

# Health literacy and self-perceived health status among street youth in Kumasi, Ghana

Padmore Adusei Amoah<sup>1\*</sup>, David R. Phillips<sup>1</sup>, Razak Mohammed Gyasi<sup>1</sup>, Adwoa Owusuaa Koduah<sup>2</sup> and Joseph Edusei<sup>3</sup>

**Abstract:** Street youth often have poor health. A number of studies have been commissioned across contexts to appreciate and address the problem. Conspicuously missing from extant researches about street youth in relation to their health however are those relating to health literacy. This study assesses general health literacy (GHL) and its association with self-perceived health status among street youth in Kumasi, Ghana. Two hundred and ninety street youth with an average age of 18 years ( $\pm 3.1$ ) participated in the study. The majority (78%) of street youth demonstrated limited GHL. Age, education, and acknowledging the streets as home, were significantly associated with GHL. Being an adult ( $\beta = -0.32, p < 0.01$ ), being female ( $\beta = 0.26, p < 0.05$ ), living on the streets for more than 3 years ( $\beta = 0.29, p < 0.05$ ), and acknowledging the streets as home ( $\beta = 0.254, p < 0.05$ ) significantly predicted limited GHL. Inadequate GHL ( $\beta = -0.50, p < 0.01$ ) and problematic GHL ( $\beta = -0.39, p < 0.01$ ) were inversely associated with self-perceived health status after adjusting for a number of sociodemographic variables. General health literacy is thus essential for improving the health status of this group of urban poor and should be duly recognised and systematically applied in a bid to ameliorate the health-related wellbeing of street youth.



Padmore Adusei Amoah

### ABOUT THE AUTHOR

Padmore Adusei Amoah is a doctoral candidate in Sociology and Social Policy at Lingnan University, Hong Kong. He holds an MPhil in Development Studies from NTNU, Norway and a BSc in Development Planning from KNUST in Ghana. Padmore has a passion for interdisciplinary research. His research interests include population health and health service research—especially regarding access to healthcare and health literacy among the general population and disadvantaged adolescents and youth; social capital; and sexuality and sexual health studies. He is currently examining a tripartite relationship between social capital, access to healthcare and health literacy among urban and rural adult residents in Ghana. This paper is a collective effort of seasoned and emerging scholars whose aim is to address the health inequities among especially poor and vulnerable groups. The authors examine the relationship between health literacy and health status among street youth in Ghana in this paper.

### PUBLIC INTEREST STATEMENT

A myriad of studies across the globe have attempted to explore the state and contributory factors as regards the health of street youth. While many of these studies have offered varying insights into their health-related issues, hardly have issues relating to health literacy been addressed among this group of urban poor. In this paper, we elucidate the nature of general health literacy (GHL) among street youth, the factors that are associated with their GHL and the relationship between the state of their health and GHL. We found that the state of GHL among the street youth—which was generally low, significantly explained their poor health status. The study also offered the opportunity to validate one of the many tools for measuring health literacy in a context where the concept is yet to gain firm grounds in relation to research and health policy-making.

**Subjects: Health Promotion; Urban Studies; Children and Youth; Public Health Policy and Practice; Medical Education**

**Keywords: health literacy; street youth; poor and vulnerable; health promotion; Ghana**

## 1. Background

Research among poor, vulnerable and minority groups in general indicates that health literacy is a vital determinant of health status and health-related inequalities. Health literacy encompasses “people’s knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life during the life course” (Sørensen et al., 2012, p. 3). However, much of research efforts on health literacy have concentrated on adults as opposed to that of adolescents and younger adults (Manganello, 2008), and even less among underserved groups such as street youth (Hawkins, Kantayya, & Sharkey-Asner, 2010). Street youth is defined here as persons from the ages of 12 to 24 years who are either homeless or precariously housed, and spend majority of their time working and engaging in street life after rebelling family life (James & James, 2012; Peressini & McDonald, 2000; Vengris, 2005). Street youth constitute one of the poorest groups in urban settings across the globe especially in developing countries (Ansell, 2005; de Benitez, 2011; Grundling & Grundling, 2005). Indeed, the Kumasi Metropolitan Assembly (KMA) has identified the phenomenon as one of the key development challenges within the Metropolis (KMA, 2010).

Like many other poor people, the poverty of street youth transcends financial difficulties. They usually have low access to essential services such as health, education and potable water (Jones & Summer, 2011; Organisation for Economic Co-operation and Development, 2003). In Ghana, street youth often sleep in alleys and open market areas and storefronts. They often work as head-porters, helpers in local restaurants, cleaners, and messengers (Amoah, 2013). Others engage in socially undesirable activities including crime, drugs, glue sniffing and prostitution (Abebe, 2008; Nada & Suliman, 2010). Their poor living conditions consistently put them at risk of ill health. Infectious and sexually transmitted illnesses including malaria, cholera, fever, flu, diarrhoea, injuries and HIV/AIDS are common among street youth in Ghana (Amoah, 2013; Anarfi, 1997; Oduro, 2012) and those in other sub-Saharan African states (Amury & Komba, 2010; Kassa, 2008; Mathebula & Ross, 2013). However, most of the times, addressing these health issues are a herculean task for the street youth owing to numerous sociodemographic and economic factors (Amoah, 2013). Moreover, it is an arduous task for governments and even non-governmental agencies to successfully convey adequate health services to street youth due to their apparent invisibility to the health system (United Nations Children’s Fund [UNICEF], 2006). This has culminated into a state of poor health for this group of urban poor.

Previous studies on street youth across the globe (de Benitez, 2011; Geber, 1997; Panter-Brick, 2002, 2004) and in Ghana (Hashim, 2007; Kwankye, Anarfi, Tagoe, & Castald, 2007) have established their demographic characteristic, their general livelihood challenges, health-related problems (Amoah, 2013; Anarfi, 1997), access to healthcare (Edusei & Amoah, 2014), and educational status and challenges (Hashim, 2007). Conspicuously missing from the available studies is the state of general health literacy of street youth and how it relates to their health status. The majority of related studies on health knowledge among street youth in Ghana and other sub-Saharan contexts have focused on specific health conditions—particularly HIV/AIDS (Eaton, Flisher, & Aarø, 2003; Oduro, 2012) rather than their knowledge on health and the health systems they find themselves. This paper assesses the level and sociodemographic correlates and predictors of general health literacy (GHL) among street youth in Kumasi Metropolitan area in Ghana. Other forms of health literacies such as functional health literacy only give a glimpse of health literacy (Wangdahl, Lytys, Martensson, & Westerling, 2014) whereas GHL portrays a broader picture. Moreover, the study assesses the relationship between GHL and self-perceived health status. It also attempts to empirically examine the suitability of one of the burgeoning tools for measuring health literacy in an

entirely new context. The stimulus for the paper is that, a better understanding of the state of GHL among street youth is crucial to adapting health information and efforts towards their direction. For “hard-to-reach” groups such as street youth (Panter-Brick, 2004), health literacy assessment and the factors that influence their health literacy bring to bear avenues to improve their health-related wellbeing by gaining a firm grip of their health-related needs.

## 2. Health literacy among poor, vulnerable, and minority groups

Poor, vulnerable and minority groups, including street youth, generally tend to have lower health literacy. People with lower health literacy tend to have poor health status and use health services more frequently than those with greater autonomy and personal empowerment regarding health knowledge (Cho, Lee, Arozullah, & Crittenden, 2008). This is because, individuals with less health knowledge are more likely to indulge in risky behaviours, use less preventive services and hence, are likely to suffer frequent health problems (Protheroe, Wolf, & Lee, 2012). Research indicates that, a significant portion of young people have problematic health knowledge even in developed countries (Manganello, 2008). Street youth, like other “hard-to-reach” groups, often lack adequate knowledge and skills to navigate the native health systems (Solorio, Milburn, Andersen, Trifskin, & Rodríguez, 2006). Their continual indulgence in potentially health dilapidating behaviours and choices such as unprotected sex (Oduro, 2012), and dangerous games (Amoah, 2013) and coupled with their limited access to healthcare as Woan, Lin, and Auerswald (2013) systematically acknowledge, are a testament to their deficient health knowledge. Hughes et al. (2010) attribute the high incidence of learning difficulties among street youth as major determinant of their health literacy. Jain and Bickham (2014) iterate that limited health literacy poses a major challenge to adolescents in their pursuit and application of credible health information. In a study among Somali refugees in the Massachusetts, Geltman et al. (2013) found an association between lower health literacy and poor oral health status. This was however related to less access to preventive care.

Street youth in other sub-Saharan countries including South Africa have demonstrated problematic knowledge on common diseases in their environment such as HIV/AIDS and their health system in general (Mathebula & Ross, 2013). In their study of rural and poor minority women in China, Wang et al. (2013) affirmed that, low health literacy is associated with poor health-related quality of life, increase in prevalence of pain/discomfort impairments.

Context specific factors such as ethnicity often influence health knowledge especially among minority groups. Wang et al. (2013) have for instance found an inverse association between health literacy and health-related quality of life among rural minority ethnic women in China. However, the determinants and impact of health literacy on health status among poor groups and ethnic minorities are inconsistent across contexts owing to sociocultural and demographic characteristics (Cho et al., 2008). This is particularly the reason for the numerous calls for contextual assessment of health literacy so as to make it policy relevant (Gillis, Begoray, & Rowlands, 2012). Moreover, the only vibrant study on health literacy in Ghana has been that of Lori, Dahlem, Ackah, and Adanu (2014) who qualitatively assessed antenatal health literacy among pregnant women in Ghana. Low health literacy was associated with difficulty interpreting and operationalising health information which they associate with cultural beliefs and potentially negative previous encounter with the healthcare system and health professionals (Lori et al., 2014). Given the low health literacy among street youth and young people in general, Manganello (2008) reckons that it is unclear how well this group of people are able to understand, process and evaluate health information for healthier lives. Juxtaposing the saliency of health literacy to health and the lack of studies in this regard among street youth in Ghana, more studies are clearly needed to establish the contributory factors to health literacy and the relationship between health literacy and health status among marginalised groups such as street youth.

### 3. Methods

#### 3.1. Context, sample and data collection

The exact number of street youth in Ghana and Kumasi are unknown. However, estimates show that there are between 33,000 and 50,000 street youth in Ghana (Oduro, 2012; Street Kid News, 2007; Tuakli, Miller, Agyarko-Kwarteng, & Jones, 2006). In Kumasi, the figures have usually ranged between 15,000 and 20,000 (Consortium for Street Children [CSC], 2009; J. A. Owusu, Personal Communication, The situation of street children in Kumasi Metropolis, July 20, 2012). These figures are however dependent on the definition of street youth which has over the years been a bone of contention among interest groups (Ansell, 2005; James & James, 2012). These numbers however demonstrate the extent of child and youth poverty in Ghana and in the Kumasi Metropolitan area (KMA, 2010). The majority of street youth in Kumasi usually migrate from different parts of the three northern regions of Ghana in search of greener pastures (CSC, 2003; Hashim, 2005; Kwankye et al., 2007). Kumasi is one of the most populous cities. Kumasi's central location makes it an attractive place for young people hoping to make it on their own (KMA, 2010).

The study is cross-sectional one. The data was gathered from June 2015 to October 2015. A cluster sampling approach (Bryman, 2008) was used to purposively select street youth from five areas in the Kumasi Metropolis namely; Kejetia Area, Aboabo station, Adum, Asafo Market area and Central market area. The majority of street youth in Kumasi were found in these areas owing to vast opportunities for work and resting spaces. The criteria for inclusion in the study included age (an interviewee had to be 12 to 24 years), relationship with streets—young people who spent the majority of their time on the streets and how many months a person had been involved in street life (a minimum of 3 months or more was required). Youth who only worked on the streets and maintained routine contact with their families—by way of spending every night at home, were excluded from the study.

All the questionnaires were interviewer-administered owing to perceived limited education among street youth (Hashim, 2005; Kwankye et al., 2007). The interviewers were trained on the research instrument—including a pretesting phase, to ensure accuracy of responses. The questionnaires were translated—from English to local language, Twi, and back to English, by a language expert to ensure that the meaning of the questions were reflective of the original instruments. Appropriate local examples were attached to questions where necessary. The interviewers were trained using both the original and translated versions of the research instrument. Verbal consent was sought from all interviewees after explaining the purpose of the study to them. For minors—those below the age of 18 years, permission were sought from their adult acquaintances on the streets including business owners who had employed some of the youth. After removing incomplete cases—as explained under measurement of GHL below—290 cases were included in this study out of 337 interviews conducted. Forty-seven cases were therefore considered incomplete. There were however about 29 instances where the interviews stopped as some participants opted out in the course of the interviews while others declined to participate. Such cases were not considered at all. This gives a response rate of approximately 92.1%.

### 4. Measurement of variables

#### 4.1. Demographic characteristics of respondents

Demographic characteristics inquired for included: age (chronological age) (Ansell, 2005), sex, ethnicity, religion, highest educational attainment including vocational training, and number of months involved in street life, whether the street was considered as home, and ownership of valid health insurance—in references to the National health insurance scheme of Ghana (Gobah & Liang, 2011). The selection of these variables was based on inferences from the literature on the subject matter. Age was grouped into two; young ones (aged 12 to 17) and adults (aged 18 to 24) (Ansell, 2005) in order to make sense of the age attribute of GHL for health. Length of stay was also grouped into six namely: 3–6 months, 7–12 months, 13–18 months, 19–24 months, 25–36 and 37 months and above. These categorisations allowed for comparison among the shortest, average and longest durations on the streets in relation to GHL.

#### 4.2. Measuring general health literacy

The paper used the Short-short version of European Health Literacy Survey Questionnaire (HLS-EU-Q6) (Pelikan, Röthlin, Ganahl, & Peer, 2014) to measure GHL among the street youth. The short version of this instrument was preferred due to the erratic nature of youths' lives. Taking cues from earlier experiences, the short nature questionnaire was adjudged as safest approach to increase response and completion rate, and maintaining attention of participants throughout the questionnaire administration. The health literacy of the youth was moreover among a number of key health determinants that was explored among the youth. The HLS-EU-Q6 scale consists of six items with five response categories. Participants were asked to respond to these questions: (a) judge when you may need to get a second opinion from another doctor? (b) use information the doctor gives you to make decisions about your illness? (c) find information on how to manage mental health problems like stress or depression? (d) judge if the information on health risks in the media is reliable? (e) find out about activities that are good for your mental wellbeing? and (f) understand information in the media on how to get healthier? The response categories were as follows: very difficult = 1, difficult = 2, easy = 3, very easy = 4, and a fifth alternative for when participants did not answer or did not have a definitive answer. This was labelled as "don't know/refused" = 99 (Pelikan et al., 2014). The last option was treated as missing value. Consideration was given to only cases with at least five (out of the six items) completed responses—i.e. not more than one incident of 'don't know/refused' response as recommended by authors of the original instrument (Pelikan et al., 2014). Cases with more than one incident of "don't know/refuse" response were considered incomplete. Health literacy using the HLS-EU-Q6 was scored based on the mean of every case. The mean scores were then used to create three levels of health literacy namely: inadequate health literacy (score below 2); problematic health literacy (score from 2 to 3) and sufficient literacy (score of 3–4) (Pelikan et al., 2014). A fourth category of GHL—limited GHL, was also constructed by combining the scores of inadequate and problematic GHL.

#### 4.3. Response variable

The main response variable was the self-perceived health status of participants. It was assessed using a five point Likert scale. Respondents were asked to rate their overall health status on a scale ranging from very poor (1), poor (2), fair (3), good (4) to very good (5). Thus, the higher the rating, the better health a person profess to have. Street youth with poor health consisted of those that scored their health as very poor, poor, and fair. "Good" health status comprised of those who rated their health either as good or very good. This approach to measuring health status has shown consistent reliability and validity across contexts and among varying population groups including the youth (Woan et al., 2013).

#### 4.4. Data analysis

Descriptive analysis was conducted to portray the sociodemographic characteristics of participants and to ascertain the general health literacy (GHL) levels of the street youth. The sociodemographic characteristics was categorised by the gender to partly reduce the temptation of proclaiming street youth as a homogenous group. Pearson's correlation was carried out to investigate the correlates of GHL. Internal consistency of the HLS-EU-Q6 instrument was examined using Cronbach's  $\alpha$ . Construct validity was also examined through exploratory factor analysis using Varimax rotation and maximum likelihood extraction method. Model fit of the data was carried out using Chi-square ( $X^2$ ) goodness of fit test (Field, 2013). Multiple regression analysis was carried out to establish the predictors of limited GHL among the street youth and was also used to explore the extent to which GHL levels predicted self-perceived health status of street youth. Two models were constructed in both instances. Demographic factors (age, sex, religion, ethnicity, and education) were included in the first step whereas street related factors (length of stay on the streets, reasons for taking to the street, and whether the street was considered as a home) were introduced in the second step. All categorical variables were reconstructed as dummy variables to ensure a valid multiple regression analysis. The significance level was set at a minimum of  $p < 0.05$  for all statistical analysis.

## 5. Results

The GHIL showed moderate reliability with Cronbach’s  $\alpha$  of 0.76. The factor analysis also showed goodness of fit,  $\chi^2(9) = 81.3, p < 0.01$ . The process extracted one factor that cumulatively explained 38.83% of the variance. The Kaiser-Meyer-Olkin (KMO) test verified adequacy of the sample for the study with a score of 0.75. All the KMO values for individual items correlation were above the acceptable limit of 0.5 (Field, 2013).

Table 1 shows the demographic and other health characteristics of participants. The majority (55%) of participants were younger youth. Participants were on the average 18 years ( $\pm 3.1$ ) with majority of them being males (52%). The majority (67%) of participants were from the northern parts of Ghana. Islam was the commonest (62%) religious affiliation of the participants. About 40% of youth had primary school as their highest educational level. A good number of street youth had experienced vocational training programs but they never got around to using their skill owing to family poverty—the major (59%) causal factor of the street youth phenomenon. The majority of them had spent over a year on the streets while a significant number (24%) of them had spent over three years on the streets. Despite, being involved in the street for appreciable times, the youth hardly considered the streets as their home.

**Table 1. Sociodemographic and health characteristics of participants by gender**

Characteristics	Male (n = 151, 52.1%)		Female (n = 139, 47.9)		Total (n = 290, 100%) <sup>a</sup>	
	n	Percentage	n	Percentage	n	Percentage
<i>Sociodemographic</i>						
<i>Age (years)</i>						
12–17	87	57.6	73	52.5	160	55
18–24	64	42.4	66	47.5	130	44
<i>Ethnicity</i>						
Asante	11	7.2	8	5.7	19	6.6
Other Akan	25	16.6	28	20.1	48	16.6
Ewe	21	13.9	4	2.9	23	7.9
Northern Tribes	92	60.9	96	69.1	193	66.6
Ga-Adangbe	0	0.0	3	2.2	3	1.0
Non-Ghanaian	2	1.3	0	0.0	4	1.4
<i>Educational attainment</i>						
Never been to school	25	16.6	16	11.5	41	14.1
Primary school	43	28.5	68	48.9	111	38.3
Junior high school	65	56.5	50	36.0	115	39
Vocational school	18	11.9	5	3.6	23	7.9
<i>Number of months on the street</i>						
3–6 months	49	32.5	29	20.9	78	26.9
7–12 months	59	39.1	39	28.1	98	33.8
13–18 months	2	1.3	2	1.4	4	1.4
19–24 months	14	9.3	13	9.4	27	9.3
25–36 months	7	4.6	6	4.3	13	4.5
37+ months	20	13.2	50	36.0	70	24.1
<i>Reason for being on the street</i>						
Poverty	88	58.3	84	60.4	172	59.3
Abusive parents/ guardians	16	10.6	7	5.0	23	7.9
Peer influence	14	9.3	17	12.2	31	10.7

(Continued)

**Table 1. (Continued)**

Characteristics	Male (n = 151, 52.1%)		Female (n = 139, 47.9)		Total (n = 290, 100%) <sup>a</sup>	
	n	Percentage	n	Percentage	n	Percentage
<b>Sociodemographic</b>						
Orphaned with no guardian	7	4.6	2	1.4	9	3.1
Desire to support myself/family	26	47.3	29	20.9	55	19.0
<i>Consider the street as home</i>						
Yes	29	19.2	38	27.3	67	23.1
No	121	80.1	99	71.2	220	75.9
<i>Health insurance</i>						
Yes	54	35.8	36	25.9	90	31.0
No	97	64.2	103	74.1	200	69.0
<i>Religion</i>						
Christianity	54	35.7	41	29.5	95	32.8
Islam	83	55.0	97	69.8	180	62.1
Traditional religion	5	3.3	0	0.0	5	1.7
No religion	9	6.0	1	0.7	10	3.4
<i>GHL</i>						
Inadequate	29	22.3	36	30.0	65	26.0
Problematic	69	53.1	62	51.7	131	52.4
Sufficient	32	24.6	22	18.3	54	21.6
<i>Health status</i>						
Very poor	9	6.0	15	10.8	24	8.3
Poor	20	13.2	18	12.9	38	13.1
Fair	73	18.5	50	36.0	123	42.4
Good	18	18.5	54	38.8	82	28.3
Very good	21	13.9	2	1.4	23	7.9

Note: n = frequency.

<sup>a</sup>There are different sums for some variables due to missing values.

The majority (52%) of the youth had problematic GHL. About 22% however had sufficient health literacy. Limited GHL (a combination of inadequate and problematic health literacies) was higher among females (82%) than males (75%). Overall, about 78% of the youth reported of limited GHL. About 64% of youth perceived their health as poor as can be inferred from Table 1.

### 5.1. Correlates of GHL among street youth

GHL was significantly correlated with age, education, and the relationship the youth had with the street (whether they considered it as home or not) (see Table 2).

### 5.2. Predictors of limited GHL

Two models were constructed (Table 4) in assessing predictors of GHL among street youth. In the first step, only age (being adult) significantly predicted limited GHL. However, in the second and final model, adults ( $\beta = -0.32, p < 0.01$ ) were less likely to have limited GHL than young ones. Being female ( $\beta = 0.26, p < 0.05$ ) positively predicted limited health literacy. Being on the streets for more than 3 years ( $\beta = 0.29, p < 0.05$ ) was significantly associated with limited health literacy. Finally, youth who considered the streets as their home ( $\beta = 0.254, p < 0.05$ ) was also a positive predictor of limited GHL (see Table 3).

**Table 2. Correlations (Pearson’s) between GHL and variables in the study**

		<b>i</b>	<b>ii</b>	<b>iii</b>	<b>iv</b>	<b>v</b>	<b>vi</b>	<b>vii</b>	<b>viii</b>	<b>ix</b>	<b>x</b>
i	GHL	1									
ii	Age	0.48**	1								
iii	Sex	-0.13	-0.21*	1							
iv	Ethnicity	0.13	0.15	0.28**	1						
v	Religion	0.09	0.18*	-0.13	0.29**	1					
vi	Education	0.37**	0.20*	0.20*	0.05	-0.10	1				
vii	Length of stay	-0.06	0.35**	-0.07	0.12	0.10	-0.13	1			
viii	Why left home	-0.08	0.05	-0.05	-0.08	0.01	-0.05	-0.08	1		
ix	Consider the street as home	0.32**	0.14	0.12	0.08	0.01	0.21*	-0.27**	0.14	1	
x	Valid health insurance	-0.12	0.18*	-0.40**	-0.17	0.129	-0.22*	0.12	0.06	-0.19*	1

\*Correlation is significant at  $p < 0.05$  level (2 tailed).

\*\*Correlation is significant at  $p < 0.01$  level.

**Table 3. Demographic predictors of limited general health literacy among street youth by hierarchical regression**

<b>Predictors</b>	<b>Model 1</b>			<b>Model 2</b>		
	<b>b (95% CI)</b>	<b><math>\beta</math></b>	<b>p-value</b>	<b>b (95% CI)</b>	<b><math>\beta</math></b>	<b>p-value</b>
<i>Age</i>						
12-17 (reference)						
18-24	-0.24 (-0.42, -0.06)	-0.271	0.010	-0.28 (-0.470, -0.093)	-0.318	0.004
<i>Sex</i>						
Male (reference)						
Female	0.11 (-0.082,0.31)	0.129	0.252	0.23 (0.028,0.422)	0.257	0.025
<i>Ethnicity</i>						
Ashanti (reference)						
Other Akan	-01.05 (-0.45, 0.34)	-0.035	0.796	-0.07 (-0.481,0.335)	-0.050	0.723
Non-Ghanaian	-0.07 (-0.7, 0.57)	-0.024	0.839	-0.31 (-1.01, 0.39)	-0.116	0.380
Ewe	0.050 (-0.40, 0.50)	0.031	0.828	0.01 (-0.44, 0.46)	0.009	0.952
Northern Tribes	-0.10 (-0.46, 0.27)	-0.102	0.600	-0.148 (-0.51, 0.22)	-0.155	0.420
Ga-Adangbe	0.24 (-0.44, 0.92)	0.074	0.481	0.26 (-0.40, 0.92)	0.079	0.441
<i>Religion</i>						
Christianity (reference)						
Islam	-0.12 (-0.032, 0.11)	-0.118	0.332	-0.05 (-0.27, 0.16)	-0.059	0.626
Traditional religion	0.022 (-0.37,0.42)	0.011	0.913	0.05 (-0.35, 0.44)	0.023	0.823
No religion	0.05 (-0.43, 0.52)	0.019	0.851	0.03 (-0.44, 0.50)	0.014	0.888
<i>Education</i>						
Never (reference)						
Primary school	-0.06 (-0.35, 0.22)	-0.070	0.660	0.09 (-0.20, 0.37)	0.096	0.554
JHS	0.24 (-0.53,0.04)	-0.269	0.096	-0.07 (-0.37, 0.24)	-0.073	0.669

(Continued)



**Table 3. (Continued)**

Predictors	Model 1			Model 2		
	<i>b</i> (95% CI)	$\beta$	<i>p</i> -value	<i>b</i> (95% CI)	$\beta$	<i>p</i> -value
Vocational education	-0.34 (-0.760, 0.02)	-0.241	0.066	-0.11(-0.49,0.28)	-0.077	0.578
<i>Length of stay</i>						
3-6 months (reference)						
7-12 months				-0.05 (-0.23,0.13)	-0.052	0.590
13-18 months				-0.4 (-1.0,0.20)	-0.122	0.191
19-24 months				0.07 (-0.20, 0.33)	0.048	0.638
25-36 months				0.29 (-0.051,0.64)	0.165	0.094
37+ months				0.29 (0.07, 0.52)	0.285	<b>0.011</b>
<i>Reason for leaving home</i>						
Poverty (reference)						
Abusive parents				0.15 (-0.22, 0.52)	0.089	0.423
Peer influence				0.041 (-0.24, 0.32)	0.028	0.774
Orphaned with no guardian				-0.10 (-0.53, 0.33)	-0.051	0.648
Desire for self-support				0.04 (-0.20, 0.27)	0.034	0.739
<i>Consider the street as home</i>						
No (reference)						
Yes				0.24 (0.043, 0.44)	0.254	<b>0.017</b>

Notes:  $R^2 = 0.21$  for model 1;  $\Delta R^2 = 0.16$  for model 2; *b* = unstandardised coefficient;  $\beta$  = standardised coefficient; CI = confidence interval; the bold values were meant to show the significant relationships.

### 5.3. Health literacy and self-perceived health

Both inadequate GHL and problematic GHL showed an inverse relationship with self-perceived health status after adjusting for other sociodemographic variables in model 2 as shown in Table 4. Street youth with limited GHL were thus likely to perceive their health as poor and vice versa.

**Table 4. GHL as predictor of self-perceived health status among street youth by multiple regression analysis**

	Model 1			Model 2 <sup>a</sup>		
	<i>b</i> (95% CI)	$\beta$	<i>p</i> -value	<i>b</i> (95% CI)	$\beta$	<i>p</i> -value
<i>Predictor (GHL)</i>						
Inadequate	-1.17 (-1.51, -0.84)	-0.51	<b>0.00</b>	-1.15 (-1.57, -0.73)	-0.50	<b>0.00</b>
Problematic	-0.57 (-0.86, -0.27)	-0.28	<b>0.00</b>	-0.79 (-1.01, -0.09)	-0.39	<b>0.00</b>
Sufficient (reference)						
Constant	3.741	-	0.00	3.204		0.00

Notes:  $R^2$  for model 1 = 0.16;  $\Delta R^2 = 0.39$  for model 2; the bold values were meant to show the significant relationships.

<sup>a</sup>Model 2 adjusted for age, sex, education, ethnicity, religion, reasons for leaving home, whether the street is considered as home, valid health insurance ownership, and length of stay on the streets.

## 6. Discussion

The paper aimed at elucidating the determinants of health literacy—functional and general health literacy among street youth from the ages of 12 and 24 years in Kumasi Metropolitan area in Ghana. To the best of our knowledge, this is the first study that has assessed health literacy—in its classic sense, among street youth in Ghana. The results provide evidence of the reliability and validity of the HLS-EU-Q instruments even in developing countries just as has been observed in Taiwan (Duong et al., 2015).

The results show that street youth in Kumasi like many other poor and vulnerable groups elsewhere have limited health literacy (Mathebula & Ross, 2013; Swart-Kruger & Richter, 1997). This is a testament to the socioeconomic deprivation suffered by street youth who are more often than not invisible to human development crusade across countries (Power et al., 1999; UNICEF, 2006). Their limited health literacy can thus be attributed to ineffective engagement with the formal health system as Lori et al. (2014) has witnessed other vulnerable groups in Ghana. Owing to this, street youth often rely on their social circles for health information (Amoah, 2013; Stephenson, 2001). The health information and services available to street youth are more often than not misrepresented and inadequate, which leads to their inability to access and utilise health information effectively.

Age (being adult), education, and positive attitudes towards living on the streets significantly differentiated GHL levels. These associations express the fact that street youth who embrace the streets as their home and have potentially stayed longer on the streets, tend to adopt coping mechanisms—including informal health education, in order to survive on the streets (Kassa, 2008). Sex differences in predicting GHL is moreover not surprising, as studies have shown in Taiwan. Factors such as gender—the social construction and expectations of the sexes, education and religion have often shaped the differences in health knowledge and consequently health literacy due to differences in everyday experiences and access to services (Lee, Tsai, & Tsai, 2013).

Adults were less likely than younger youth to have limited health literacy. This may mean that current adults on the streets may have spent ample time at home before moving to the streets. In fact, the street youth had lived an average of two years on the streets. The youngest adults (18 year olds) may have taken to the streets at least at the age of 16 years. Indeed, Kaphingst, Goodman, MacMillan, Carpenter, and Griffey (2014) assert that age is generally an inverse predictor of health literacy among both general and older populations. This inverse relationship is imputable to differences in health experiences. The health literacy of the street youth thus depended more on their ability to manoeuvre for health knowledge through in-depth experiences on the streets, as appropriate health knowledge and information are usually inaccessible to disadvantaged groups. The younger youth develop a street culture, which with time, informs their understanding of health and health issues (Ansell, 2005; Ennew, 1994; Ennew & Swart-Kruger, 2003). Moreover, limited health literacy among younger youth as opposed to the older street youth affirms the assertion that adolescents may have poor health literacy even among those in developed countries (Brown, Teufel, & Birch, 2007). However, this discovery is contradicted by the finding that, street youth who lived on the streets for more than three years tend to have limited health literacy. This signified that longer a youth indulges in street life, the more his/her health literacy deteriorates. Street youth who had lived longer on the streets and considered the streets as their home therefore forwent the normative way of learning and maintaining healthiness and conventional health knowledge in favour of street knowledge and survival skills, which in the long run impinged on their health literacy.

Females were also more likely than males to have limited health literacy. Although many of the street youth especially those migrating from northern parts of Ghana are usually females, these females usually have little or no education and their everyday choices are highly dependent on others (Kwankye, Anarfi, Tagoe, & Castaldo, 2009). However, another likely explanation is that males do have a significant tendency to over report their comprehension of health information as Lee et al. (2013) found among Taiwanese men. This is attributable to masculinist culture in many sub-Saharan states (Ayttey, 2006) which leads to the desire for self-reliance and their tendency to avoid encounters with the formal health delivery system. The males among the youth therefore felt the need to

portray themselves as resilient instead of appearing weak and vulnerable in view of the local culture as (Buor, 2004) has previously demonstrated. This finding however departs from results of studies such as that of Cotton, Wright, Harris, Jorm, and McGorry (2006) among Australian adolescents where females appeared to be more astute as regards health knowledge.

Previous research has extensively established that people with limited health literacy tend to have poor health status and the vice versa (Protheroe et al., 2012). This study buttresses this assertion. Street youth with limited GHL were more likely to perceive their health as poor than those with sufficient GHL. To some extent, their generally poor health status could be explained by their poor healthcare experience as people with limited health literacy tend to communicate ineffectively during medical encounters (Protheroe et al., 2012). This was manifested among the street youth in Kumasi as limited GHL was associated with health status—which was generally poor.

However, considering this study was based on self-reported health literacy and health status, some of the youth may have given responses that reflect their social desirability instead of their actual situation. There is also the chance that some of the youth may have inaccurately recollected experiences that was relevant for the study. Moreover, the unbalanced power relationships between interviewers and interviewees could have also biased the responses of participants given the sharp contrast in their socioeconomic status. Aside from that, the data lacked other essential socioeconomic variables such as income. However, the strength of this study lies has to do with the unique sample. Street youth represent a peculiar group of people—one whose case has been least studied. Moreover, conscious effort to undertake the data collection in local language strengthens the reliability of results.

## 7. Conclusion

The paper has expounded on health literacy among street youth. The study supports earlier assertions that street youth have limited health literacy. Based on the results, factors such as age, positive attitude towards street life, sex, and length of stay on the streets, all of which are associated with limited health literacy of street youth in Kumasi, present a starting point for interventions towards addressing health literacy gaps among street youth. Its strong association with health status among the street youth reaffirms the saliency of health literacy as an essential approach for improving the health-related wellbeing of this group of urban poor and should be granted the requisite attention.

### Acknowledgement

This paper emerged from a broader study to establish the association between social capital, health literacy, and access to health services, in selected rural and urban localities in Ashanti region in Ghana. The Committee on Human Research Publication, and Ethics (CHRPE) of School of Medical Sciences, Kwame Nkrumah University of Science and Technology and Komfo Anokye Teaching Hospital, Kumasi, Ghana, (CHRPE/AP/345/15) approved the study as part of larger study. The study protocol was also reviewed by the Department of Social Welfare of the Kumasi Metropolitan Area as well as the Street Children Project—a non-governmental organisation, who also assisted in recruiting participants.

### Funding

The authors received no direct funding for this research.

### Competing Interests

The authors declare no competing interests.

### Author details

Padmore Adusei Amoah<sup>1</sup>  
E-mails: [padmoreaduseiamoah@ln.edu.hk](mailto:padmoreaduseiamoah@ln.edu.hk),  
[padmoreamoah@yahoo.com](mailto:padmoreamoah@yahoo.com)  
ORCID ID: <http://orcid.org/0000-0002-8730-5805>  
David R. Phillips<sup>1</sup>  
E-mail: [phillips@ln.edu.hk](mailto:phillips@ln.edu.hk)

Razak Mohammed Gyasi<sup>1</sup>

E-mail: [rgyasi@ln.edu.hk](mailto:rgyasi@ln.edu.hk)

Adwoa Owusuuaa Koduah<sup>2</sup>

E-mail: [owusuuaa.koduah@gmail.com](mailto:owusuuaa.koduah@gmail.com)

Joseph Edusei<sup>3</sup>

E-mail: [joeedus@yahoo.com](mailto:joeedus@yahoo.com)

<sup>1</sup> Department of Sociology and Social Policy, Lingnan University, Tuen Mun, Hong Kong (SAR).

<sup>2</sup> School of Nursing, Hong Kong Polytechnic University, Hung Hom, Hong Kong.

<sup>3</sup> Centre for Settlements Studies, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

### Citation information

Cite this article as: Health literacy and self-perceived health status among street youth in Kumasi, Ghana, Padmore Adusei Amoah, David R. Phillips, Razak Mohammed Gyasi, Adwoa Owusuuaa Koduah & Joseph Edusei, *Cogent Medicine* (2017), 4: 1275091.

### References

- Abebe, T. (2008). Earning a living on the margins: Begging, street work and the socio-spatial experience of children in Addis Ababa. *Geografiska Annaler. Series B, Human Geography*, 9, 271–284.
- Amoah, P. A. (2013). *Addressing the health problems of street children: The case of street children in Kumasi Metropolitan*

- Area, Ghana (Master of Philosophy). Norwegian University of Science and Technology, Trondheim.
- Amury, Z., & Komba, A. (2010). *Coping strategies used by street children in the event of illness* (Research Report 10/1 ed.). Dar es Salaam: Research on Poverty Alleviation.
- Anarfi, K. J. (1997). Vulnerability to sexually transmitted disease: Street children in Accra. *Health Transition Review*, 7, 281–306.
- Ansell, N. (2005). *Children, youth and development*. London: Routledge.
- Ayittey, G. B. N. (2006). *Indigenous African institutions* (2nd ed.). New York, NY: Transnational Publishers Inc.  
<http://dx.doi.org/10.1163/ej.9781571053374.i-586>
- Brown, S. L., Teufel, J. A., & Birch, D. A. (2007). Early adolescents' perceptions of health and health literacy. *Journal of School Health*, 77, 7–15.  
doi:10.1111/j.1746-1561.2007.00156.x
- Bryman, A. (2008). *Social research methods* (3rd ed.). New York, NY: Oxford University Press.
- Buor, D. (2004). Gender and the utilisation of health services in the Ashanti Region, Ghana. *Health Policy*, 69, 375–388.  
<http://dx.doi.org/10.1016/j.healthpol.2004.01.004>
- Cho, Y. I., Lee, S.-Y., Arozullah, A., & Crittenden, K. S. (2008). Effects of health literacy on health status and health service utilization amongst the elderly. *Social Science & Medicine*, 66, 1809–1816.  
<http://dx.doi.org/10.1016/j.socscimed.2008.01.003>
- Consortium for Street Children. (2003). *A civil society forum for anglophone west africa on promoting and protecting the rights of street children*. London: Author.
- Consortium for Street Children. (2009). *Street Children Statistics*. London: Author.
- Cotton, S. M., Wright, A., Harris, M. G., Jorm, A. F., & McGorry, P. D. (2006). Influence of gender on mental health literacy in young Australians. *Australian and New Zealand Journal of Psychiatry*, 40, 790–796.  
doi:10.1111/j.1440-1614.2006.01885.x
- de Benitez, S. T. (2011). *State of the world's street children: research* (Street Children Series). London: Consortium for Street Children.
- Duong, V. T., Lin, I. F., Sorensen, K., Pelikan, J. M., Van Den Broucke, S., Lin, Y. C., & Chang, P. W. (2015). Health literacy in Taiwan: A population-based study. *Asia-Pacific Journal of Public Health*, 27, 871–880.  
doi:10.1177/1010539515607962
- Eaton, L., Flisher, A. J., & Aarø, L. E. (2003). Unsafe sexual behaviour in South African youth. *Social Science & Medicine*, 56, 149–165.  
doi:10.1016/S0277-9536(02)00017-5
- Edusei, J., & Amoah, P. A. (2014). Appreciating the complexities in accessing health care among urban poor: The case of street children in Kumasi metropolitan area. *Ghana. Developing Country Studies*, 4, 69–88.
- Ennew, J. (1994). Parentless Friends: A cross-cultural examination of networks among street children and street youth. In F. Nestman & K. Hurrelman (Eds.), *Social Networks and Social Support in Childhood and Adolescence* (pp. 409–428). New York, NY: Aldine de Gruyter.
- Ennew, J., & Swart-Kruger, J. (2003). Introduction: Homes, places and spaces in the construction of street children and street youth. *Children, Youth and Environments*, 13(1), 1–21.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). London: Sage.
- Geber, G. (1997). Barriers to health care for street youth. *Journal of Adolescent Health*, 21, 287–290.  
[http://dx.doi.org/10.1016/S1054-139X\(97\)00111-0](http://dx.doi.org/10.1016/S1054-139X(97)00111-0)
- Geltman, P. L., Adams, J. H., Cochran, J., Doros, G., Rybin, D., Henshaw, M., ... Paasche-Orlow, M. (2013). The impact of functional health literacy and acculturation on the oral health status of somali refugees living in Massachusetts. *American Journal of Public Health*, 103, 1516–1523.  
doi:10.2105/ajph.2012.300885
- Gillis, D. E., Begoray, D., & Rowlands, G. (2012). Introducing Health Literacy in Context. In D. Begoray, D. E. Gillis, & G. Rowlands (Eds.), *Health literacy in context: International perspectives* (pp. 1–12). New York, NY: Nova Science Publishers Inc.
- Gobah, F. F. K., & Liang, Z. (2011). The national health insurance scheme in Ghana: Prospects and challenges: A cross-sectional evidence. *Global Journal of Health Science*, 3, 90–101.
- Grundling, J., & Grundling, I. (2005). The concrete particulars of the everyday realities of street children. *Human Relations*, 58, 173–190.  
<http://dx.doi.org/10.1177/0018726705052180>
- Hashim, I. M. (2005). *Research report on children's independence migration from northern to central Ghana development research centre on migration, globalisation and poverty*. Brighton: University of Sussex.
- Hashim, I. (2007). Independent child migration and education in Ghana. *Development and Change*, 38, 911–931.  
doi:10.1111/j.1467-7660.2007.00439.x
- Hawkins, A. O., Kantayya, V. S., & Sharkey-Asner, C. (2010). Health literacy: A potential barrier in caring for underserved populations. *Disease-a-Month*, 56, 734–740.  
doi:10.1016/j.disamonth.2010.10.006
- Hughes, J. R., Clark, S. E., Wood, W., Cakmak, S., Cox, A., MacInnis, M., ... Broom, B. (2010). Youth homelessness: The relationships among mental health, hope, and service satisfaction. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 19, 274–283.
- Jain, A. V., & Bickham, D. (2014). Adolescent health literacy and the Internet: Challenges and opportunities. *Current Opinion in Pediatrics*, 26, 435–439.  
doi:10.1097/mop.0000000000000119
- James, A., & James, A. (2012). *Key concepts in childhood studies*. London: Sage.
- Jones, N., & Summer, A. (2011). *Child poverty, evidence and policy: Mainstreaming children in international development*. Bristol: The Policy Press.
- Kaphingst, K. A., Goodman, M. S., MacMillan, W. D., Carpenter, C. R., & Griffey, R. T. (2014). Effect of cognitive dysfunction on the relationship between age and health literacy. *Patient Education and Counseling*, 95, 218–225.  
doi:10.1016/j.pec.2014.02.005
- Kassa, C. S. (2008). *Health seeking behaviour among street children and government's response to their rights: The case of Addis Ababa* (Master). Norwegian University of Science and Technology, Trondheim.
- Kumasi Metropolitan Assembly. (2010). *Development plan for Kumasi metropolitan area 2010–2013*. Kumasi: Author.
- Kwankye, S. O., Anarfi, J., Tagoe, C. A., & Castald, A. (2007). *Coping Strategies of Independent child migrants from Northern Ghana to southern cities* (Working Paper T-23 ed.). Brighton: University of Ghana and Development Research Centre on Migration, Globalisation and Poverty.
- Kwankye, S. O., Anarfi, J. K., Tagoe, C. A., & Castaldo, A. (2009). *Independent north-south child migration in Ghana: The decision making process*. Brighton: Development Research Centre on Migration, Globalisation and Poverty, University of Sussex.
- Lee, S.-Y. D., Tsai, T.-I., & Tsai, Y.-W. (2013). Accuracy in self-reported health literacy screening: A difference between men and women in Taiwan. *BMJ Open*, 3, e002928.  
doi:10.1136/bmjopen-2013-002928
- Lori, J. R., Dahlem, C. H. Y., Ackah, J. V., & Adanu, R. M. K. (2014). Examining Antenatal Health Literacy in Ghana. *Journal of Nursing Scholarship*, 1–9.
- Manganello, J. A. (2008). Health literacy and adolescents: A framework and agenda for future research. *Health Education Research*, 23, 840–847.  
doi:10.1093/her/cym069

- Mathebula, S. D., & Ross, E. (2013). Realizing or relinquishing rights? Homeless youth, their life on the streets and their knowledge and experience of health and social services in Hillbrow, South Africa. *Social Work in Health Care*, 52, 449–466. doi:10.1080/00981389.2012.742483
- Nada, K., & Suliman, E. D. A. (2010). Violence, abuse, alcohol and drug use, and sexual behaviors in street children of Greater Cairo and Alexandria, Egypt. *AIDS*, 24, S39–S44. <http://dx.doi.org/10.1097/01.aids.0000386732.02425.d1>
- Oduro, G. Y. (2012). 'Children of the street': Sexual citizenship and the unprotected lives of Ghanaian street youth. *Comparative Education*, 48, 41–56. <http://dx.doi.org/10.1080/03050068.2011.637762>
- Organisation for Economic Co-operation and Development. (2003). *Poverty and health in developing countries: Key actions*. Paris: Author.
- Panter-Brick, C. (2002). Street children, human rights, and public health: A critique and future directions. *Annual Review of Anthropology*, 31, 147–171. <http://dx.doi.org/10.1146/annurev.anthro.31.040402.085359>
- Panter-Brick, C. (2004). Homelessness, poverty, and risks to health: Beyond at risk categorizations of street children. *Children's Geographies*, 2, 83–94. <http://dx.doi.org/10.1080/1473328032000168787>
- Pelikan, J., Röthlin, F., Ganahl, K., & Peer, S. (2014). *Measuring comprehensive health literacy in general populations—The HLS-EU instruments*. Paper presented at the The Second International Conference of Health Literacy and Health Promotion, Taipei.
- Peressini, T., & McDonald, L. (2000). Urban Homelessness in Canada. In T. Bunting & P. Filion (Eds.), *Canadian cities in transition: The twenty-first century* (2nd ed., pp. 523–543). Don Mills: Oxford University Press Canada.
- Power, R., French, R., Connelly, J., George, S., Hawes, D., Hinton, T., ... Warner, D. (1999). Health, health promotion, and homelessness. *BMJ*, 318, 590–592. <http://dx.doi.org/10.1136/bmj.318.7183.590>
- Protheroe, J., Wolf, M., & Lee, A. (2012). Health literacy and health outcomes. In D. Begoray, D. E. Gillis, & G. Rowlands (Eds.), *Health Literacy in Context* (pp. 57–74). New York, NY: Nova Science Publishers.
- Solorio, M. R., Milburn, N. G., Andersen, R. M., Trifskin, S., & Rodriguez, M. A. (2006). Emotional distress and mental health service use among urban homeless adolescents. *The Journal of Behavioral Health Services & Research*, 33, 381–393. doi:10.1007/s11414-006-9037-z
- Sørensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., & Brand, H. (2012). Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health*, 12(80), 1–13.
- Stephenson, S. (2001). Street children in Moscow: Using and creating social capital. *The Sociological Review*, 49, 530–547. <http://dx.doi.org/10.1111/sore.2001.49.issue-4>
- Street Kid News. (2007). *Ghana: What hope for thousands of street children?* Retrieved December 13, 2011, from <http://streetkidnews.blogspot.com/2007/03/06/ghana-what-hope-for-thousands-of-street-children/>
- Swart-Kruger, J., & Richter, L. (1997). AIDS-related knowledge, attitudes and behaviour among South African street youth: Reflections on power, sexuality and the autonomous self. *Social Science & Medicine*, 45, 957–966. [http://dx.doi.org/10.1016/S0277-9536\(96\)00417-0](http://dx.doi.org/10.1016/S0277-9536(96)00417-0)
- Tuakli, J., Miller, A., Agyarko-Kwarteng, T., & Jones, L. (2006). *Situational analysis of vulnerable children in Ghana*. Accra: World Education.
- United Nations Children's Fund. (2006). *The State of the World's Children: Excluded and Invisible*. Retrieved December 11, 2012, from [http://www.unicef.org/sowc06/pdfs/sowc06\\_fullreport.pdf](http://www.unicef.org/sowc06/pdfs/sowc06_fullreport.pdf)
- Vengris, J. (2005). *Addressing the Needs of street-involved and homeless youth in Hamilton*. Hamilton: Social Planning and Research Council of Hamilton.
- Wang, C., Li, H., Li, L., Xu, D., Kane, R. L., & Meng, Q. (2013). Health literacy and ethnic disparities in health-related quality of life among rural women: Results from a Chinese poor minority area. *Health and Quality of Life Outcomes*, 11, 153. doi:10.1186/1477-7525-11-153
- Wangdahl, J., Lytsy, P., Martensson, L., & Westerling, R. (2014). Health literacy among refugees in Sweden - a cross-sectional study. *BMC Public Health*, 14, Article ID: 1030. doi:10.1186/1471-2458-14-1030
- Woan, J., Lin, J., & Auerswald, C. (2013). The health status of street children and youth in low- and middle-income countries: A systematic review of the literature. *Journal of Adolescent Health*, 53, 314–321.e12. doi:10.1016/j.jadohealth.2013.03.013



© 2017 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

You are free to:

Share — copy and redistribute the material in any medium or format

Adapt — remix, transform, and build upon the material for any purpose, even commercially.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

No additional restrictions

You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.

