Adolescent Health Literacy, Social Media Exposure, and Perceived Health Status

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Abstract

This study determined the relationships of functional, interactive and critical adolescent health literacy with sociodemographic characteristics, social media exposure (SME), and perceived health status (PHS). A total of 314 high school students from Grades 7 to 10 completed a self-administered questionnaire. Findings revealed that functional health literacy is influenced by age (p-value = 0.058) and parents' educational attainment (FEA: p-value = 0.059; MEA: p-value = 0.033); interactive health literacy was only significantly associated with SME (p-value = 0.004); and critical health literacy was significantly correlated with father's educational attainment (p-value = 0.062), SME (p-value = 0.08), and PHS (p-value = 0.019). For the logistic regression model of functional health literacy, only age was a distinct variable, and for interactive health literacy, it was SME. Other variables such as parenting styles, socioeconomic class, and school and peer influences are encouraged for future research for a deeper understanding of adolescent health literacy.

Keywords: adolescent, health literacy, perceived health status, social media exposure

Introduction

Health literacy is the ability to acquire health information from a variety of sources, process this information, and act appropriately on it. It goes beyond one's capability to read and write and relies on sound decision-making for one's health and wellness (Suri Majid, Chang, & Foo, 2015). Dunn (2015) defines health literacy as the intersection between the demands and complexities of one's health condition, and the skills and abilities needed to manage it. It deals with a person's competence in acquiring health knowledge and taking responsibility for one's health.

One factor that may affect health literacy is perceived health status or subjective health. It is an individual's perceived state of wellness. A person's claim of poor health means a perception that one's physical well-being is unwell, damaged, or ill (Green Facts, 2016). Perceived health status is also an indicator of an individual's future health outcomes, along with other socioeconomic factors (Landefeld et al., 2014). If adequate health literacy leads to favorable health outcomes, then knowing their perceived health status could serve as the validation of how healthy or unhealthy a person could be.

The internet and social media use play relatively vital roles as easy sources of adolescents' health information since health-related information could be retrieved online (Parisod, Axelin, Smed, & Salanterä, 2016). Adolescents often rely on their gadgets to explore different concepts, health topics included (Lenhart, 2015). A part of their knowledge is based on what they can find with the use of the internet and that they might choose it over the help of an established health professional. They look up varying illnesses, sets of symptoms, and treatments online. Thus, adolescent health literacy levels are largely influenced by the use of technology (Parisod et al., 2016).

Health literacy can be divided into different types: functional literacy, critical literacy, and interactive literacy (Suri et al., 2015). Functional health literacy pertains to the sufficient basic reading and writing skills a person needs in order to absorb health information (Nutbeam, 2008) and understand one's own health issues (Health Literacy Centre Europe [HLCE], 2015). Interactive health literacy encompasses a person's social skills that would help when socializing and extracting health information from different sources (Nutbeam, 2008). It includes the individuals' ability to ask questions and discuss their health problems (HLCE, 2015). Lastly, critical health literacy covers a person's urge to take social, individual and political actions to change the determinants of health in the community (Nutbeam, 2008). It concentrates on how that information can be applied in order to make informed health decisions (HLCE, 2015).

The Centers for Disease Control and Prevention (2015) stated that health literacy helps in the prevention of health problems, protect health conditions, and even help in the management of untoward emergency situations should they arise. Inadequate rates of health literacy could lead to unwanted health outcomes such as the lowering quality of care, higher care costs, and lower health status (Jeong & Kim, 2016).

Liang and Brach (2017) reported that only 12% of adults exhibit proficient health literacy rates. Low health literacy leads to a series of negative health situations such as skipping preventive measures which would ultimately help in avoiding chronic diseases, unnecessarily increasing hospital rates due to lack of knowledge, and decrease in overall health status. The Philippine Council for Health Research and Development (PCHRD, 2014) stated that one major reason

behind the suffering of Filipinos from illnesses is the country's low health literacy. A common practice among Filipinos is the act of consulting health officials like doctors when their illness is already chronic and critical. Adequate health literacy levels could provide mitigations against such instances.

Adolescents are individuals in the process of maturing in all developmental domains toward adulthood (Sawyer, Azzopardi, Wickremarathne & Patton, 2018). Physically, they experience a growth spurt and achieve fertility as their reproductive system starts to fully function (Hopkins, 2014). Cognitively, adolescents manifest advanced reasoning skills, abstract thinking skills, and a greater capacity to think about thinking, otherwise known as "metacognition" (Berk, 2016). Emotionally, they hone their emotional intelligence and regulation skills while socially, adolescents take on more social roles as they interact with peers and adults (Berk, 2016). Hence, adolescence is the age group that would ideally have the least worries, health-wise. They have become old enough to not be affected by childhood diseases but have yet to be touched by illnesses which plague the older population through aging (World Health Organization [WHO], 2013). Whenever adolescents encounter health problems, particularly in the Philippines, they are mostly centered on their primary health and physical injuries brought about by violence (WHO, 2013). Approximately 50 percent of the Philippine adolescent population have engaged in a physical fight at least once within a span of a year. However, it has been reported that it gradually decreases with age. Most Filipino adolescents consult with their school physicians or private physicians for medical check-ups and minor illnesses (Department of Health, 2001). There are public and/or private health facilities, rural health facilities, and barangay health stations for physical injuries incurred due to their risky behaviors (Department of Health, 2017).

The low health literacy levels in the country reflect the possible decline in health outcomes (PCHRD, 2014). This study addressed that issue, particularly among the adolescents, and analyzed the possible factors that could contribute to the health literacy levels of their age group. Adolescent health literacy has been crucially low world-wide despite the free-flowing information brought about by the advancement of technology (Lenhart, 2015). There are few studies about it as compared with assessment of adult health literacy (Dewalt and Hink, 2009) and there have not been studies which pertain to the said issue here in the Philippines. The findings from this study can pave way for innovation programs by schools or other institutions that will enhance adolescent health outcomes.

Thus, the study aimed to determine adolescent health literacy levels and its associations with sociodemographic characteristics, social media exposure, and perceived health status. It is hypothesized that the sociodemographic characteristics of adolescents, their perceived health status, and their social media exposure scores are independent from their health literacy levels.

Methodology

This is a quantitative study using a cross-sectional research design. Respondents were Grades 7 to 10 students of two urban private high school institutions in the southern part of Metro Manila. These educational institutions were established approximately 20 years ago, have recently implemented the K-12 curriculum, and use English as their medium of instruction. There were 314 participants aged 12-18 (142 females and 172 males). Complete enumeration was done. Permission of the school heads were obtained along with the informed consent of the participants. They were given the questionnaire to answer in their classroom which took approximately 10 minutes to accomplish.

The self-administered questionnaire was constructed with 4 parts. The first part gathered the socio-demographic characteristics of the respondents (age, sex, grade level, weekly allowance and their parents' educational attainments). The second part pertained to social media exposure where they were asked about the social media sites they often visit, what technological devices they own, and how much time they allot for their social media accounts per day. The third part comprised of the health literacy tool called FCCHL Scale by Ishikawa, Takeuchi and Yano (2008). It featured 14 questions, divided into the three types of health literacy, all of which were answered with a given Likert scale (Never-Often). There were five items for Functional Health Literacy, asking about the individual's ability to read health information. Another five items, for Communicative/Interactive Health Literacy, focused on the individual's capacity to extract information from different sources and what s/he does in order to obtain them. The four items for Critical Health Literacy pertained to a person's ability to distinguish the validity of health information and how s/he would apply it. For Interactive and Critical Health Literacy, the higher the scores, the higher their respective health literacy types. The trend was reversed for Functional Health Literacy where the higher the score, the lower the respondent's FHL. The fourth part had five questions adapted from the Short Form Survey of the Medical Outcomes Study (Hays & Shapiro, 1992) to measure the respondent's perceived general health status. High scores translate to better perceived health.

After data encoding, Spearman's Correlation was utilized to determine the correlations between the different types of health literacy and their age, weekly allowance, parents' educational attainment, social media exposure scores, and perceived health status scores. Kruskal-Wallis test was utilized for the relationship of sex and the different health literacy types. After the correlation analyses, Logistic Regression Analysis was done to analyze the influences of the variables concerned to the different health literacy types. The working equation for this was: $Y_{x\ health\ literacy} = b_{coefficient\ constant} + DX_1$ (variable coefficient)

This study did not directly address the effects of parents on the health knowledge of the adolescents. Also, the indicator of their income class is limited to their weekly allowance. It also does not give explanations for other possible factors such as academic performance or self-efficacy which could contribute to health literacy levels of the respondents.

Results and Discussion

Socio-demographic Characteristics of the Respondents
Among the 314 high school respondents, a quarter each were 14 and 15 years old (Table 1). More than half were males and half had allowances which ranged from 500-1,000 pesos/week. This shows that majority of the respondents come from middle-class families. Nearly half of the mothers and fathers finished college education which implies that these significant adults are well-adept with knowledge regarding general health and human well-being.

Table 1: Sociodemographic Characteristics of the Respondents

Characteristics	Frequency	Percentage (N=314)
Age		
12	12	3.82%
13	62	19.75%
14	81	25.80%
15	78	24.84%
16	67	21.33%
17	13	4.14%
18	1	0.32%
Sex		
Female	142	45.22%
Male	172	54.78%
Weekly Allowance		
Less than 500	144	45.86%
500 to 1,000	160	50.96%
1,001 to 1,500	7	2.23%
1,501 and up	3	0.96%
Fathers' Education Attainment		
No EA	3	0.96%
Pre-school	1	0.32%
Elementary	7	2.23%
High School	36	11.46%
College	142	45.22%
Graduate Studies	125	39.81%
Mothers' Education Attainment		
No EA	1	0.32%
Pre-school	0	0.00%
Elementary	8	2.55%
High School	52	16.56%
College	125	39.81%
Graduate Studies	128	40.76%

Social Media Exposure (SME)

Most Visited Social Networking Sites

Facebook is the most visited social networking site among the respondents, with 99% of them having Facebook accounts (Table 2). Other social networking sites/applications garnered a

significant number of responses as well. Other mentioned websites were Wattpad, Ask.fm, and Omegle.

Table 2: Social Media Exposure of the Respondents

Component	Frequency	Percentage (N=314)
Most visited site		
Facebook	311	99.04%
Twitter	183	58.92%
Snapchat	133	42.36%
Instagram	109	34.71%
Ownership of smart phone		
With smart phones	286	91.08%
Without smart phones	28	8.92%
No. of hours/day of usage		
1-4 hours	73	25.52%
5-8 hours	109	38.11%
9 hours and above	104	36.36%
Frequency of SM visits		
Low	31	9.87%
Moderate	77	24.52%
High	206	65.61%

Number of Smart Phone Users. Majority of the respondents owned smart phones (Table 2). Most of those who do not own one were Grade 7 students. Their parents may not have permitted them to have one yet. When asked how they access social networking sites, they answered that they use laptops instead or they go to computer shops.

Number of Hours of Social Media Usage in a Day. When asked how many hours/day they allot for social media, the mean hours garnered was approximately 7.59, with 1 as the lowest number and 24 as the highest. Table 2 shows that three-fourths of the adolescents allocate five hours or more for their social media usage.

How Often They Visit Social Media Sites. When asked to rate on a scale of 1 to 10 how often they use social media, the adolescents had a mean scale score of 7.5. Table 2 indicates that two-thirds observe a high frequency of social media usage.

Social Media Exposure Scores. Majority of the adolescents have been found to be highly exposed to social media usage. The mean of all the SME scores is 7.36, with 2 as the minimum and 12 as the maximum. Approximately 67% of the students scored 7 and higher (Table 3), which is the higher half of the range. These figures support Lenhart's (2015) study, stating that adolescents are enthusiasts of the technologies of today.

Table 3: Distribution of the Social Media Exposure Scores of the Adolescents

Scores	Frequency	Percentage (N=314)
1	0	0.00%
2	7	2.23%
3	5	1.59%
4	21	6.69%
5	21	6.69%
6	49	15.61%
7	50	15.92%
8	61	19.43%
9	49	15.61%
10	41	13.06%
11	8	2.55%
12	2	0.64%

Perceived Health Status (PHS)

The PHS scores of the adolescents were found to be at the higher end of the score range. The mean score was 65.71 and the maximum and minimum scores are 100 and 5, respectively (Figure 1). The respondents have relatively positive perspectives about their health. This could possibly be due to the fact that adolescents are not as worrisome about their health as other age groups. With their bodies at the peak of development (WHO, 2013), adolescents are not as prone to severe diseases as older or younger people.
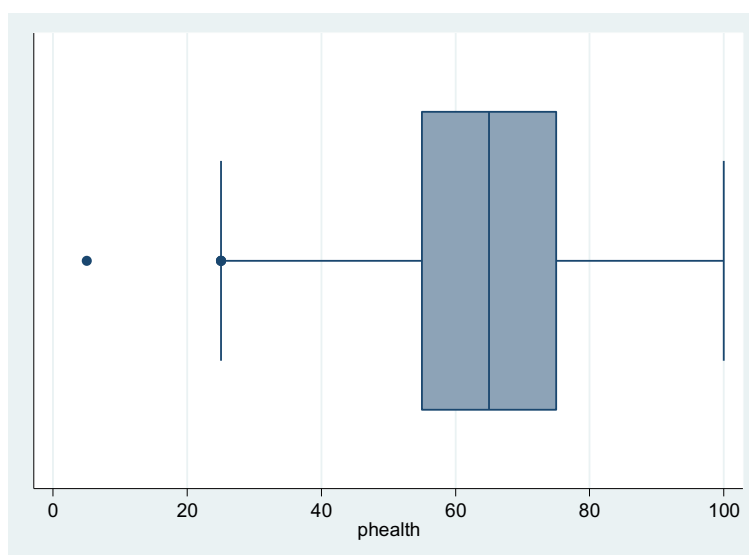

Figure 1. Boxplot representation of the perceived health status scores of the respondents.

Functional (FHL), Interactive (IHL), and Critical (CHL) Health Literacy Scores of the Respondents

The mean FHL score is 1.36, part of the lower half of the score range. Based on the reverse scoring, having a lower score is better (Table 4). More than half of the adolescents have a good FHL level. They are able to absorb health information properly and easily, and they know how to process such information for their own benefit. A possible contributor to this could be the education they receive from their respective schools. With basic literacy skills being taught to students, reading and comprehension are enhanced as they go through their schooling. These skills are also enhanced in their Science and Health subjects.

Table 4: Adolescent Health Literacy Scores of the Respondents

Categories of HL	Frequency	Percentage (N=314)
Functional HL		
High scores	137	43.64%
Low scores	177	56.37%
Interactive HL		
High scores	248	78.98%
Low scores	66	21.02%
Critical HL		
High scores	273	86.94%
Low scores	41	14.06%

With a mean score of 1.84, the respondents' IHL levels are relatively high with more than three-fourths having high IHL scores (Table 4). They are able to converse with significant adults like their parents, teachers, or health practitioners, interact with different sources of health information, and know where to look for them.

Lastly, the mean CHL score garnered is 1.98. CHL scores of the respondents are high with majority having high scores (Table 4). This means that the adolescents have a relatively large capacity to apply the health knowledge they know, should the need for it arise in certain health situations (HLCE, 2015).

Relationships of the Socio-demographic Characteristics of the Adolescents to their Functional, Interactive and Critical Health Literacy Levels

Functional Health Literacy (FHL)

Age vs. FHL. The relationship of age to adolescent functional health literacy was found to be significant with a low but positive degree of association at p=0.058 (Table 5). As the age of the adolescents increase, so do their FHL scores. Higher FHL scores, however, mean less adequate FHL. Thus, age as a variable is inversely proportional to the adolescent's ability to absorb and process health information.

Jeong and Kim (2016) found that older age groups tend to have lower health literacy levels than those who are younger. Their findings showed that the mean age of those with adequate health literacy (40.10 y/o) was relatively lower than the mean age of those with inadequate levels (49.92 y/o). Their study claims that the relationship between age and health literacy are

not always directly proportional. A person could have impressive basic literacy skills but still be poorly knowledgeable when it comes to health information and outcomes. There were similar observations found for decreasing FHL as age increases (Baker, Gazmararian, Sudano, & Patterson, 2000; Von Wagner, Knight, Steptoe & Wardle, 2007). It seems that decreasing cognitive functions may be a factor in this trend. Moreover, they deduced that other external factors may contribute as well such as frequency in reading newspapers, health status, and visual acuity.

For adolescents, a possible reason for this trend could be the existence of barriers to their health-information seeking practices such as having no proper access to health practitioners, being the main dependents in their households, and having no means to access expensive literary materials (Jeong & Kim, 2016). Moreover, younger adolescents may not be as health-conscious as the older ones due to the fact that they may not fully understand the consequences of their actions and are not prepared to avoid risks (Sanders, 2013). Their priorities and self-image also change as they grow older. Adolescents are known to have more priorities pertaining to their material interests and have an "I am invincible" mentality until their late teen years (Sanders, 2013). Thus, their attitude towards health literacy may not be as keen as older adolescents transitioning to adulthood.

Sex vs. FHL. The relationship between sex and FHL was found to be positive with an almost negligible degree of association (p-value=0.155) and the relationship was not significant. Moreover, the Kruskal-Wallis test indicated that there were no significant differences between the FHL scores of the male and female students. The mean FHL scores of males was 1.36 and for females, it was 1.35.

Similarly, Toci et al. (2014) stated that sex does not hold a significant influence over the health literacy of individuals. The findings on its impact have been varied and there have been no apparent trend among previous works which tackled this variable. Jeong and Kim (2016) also stated that gender has no significant effect on those who have adequate and inadequate health literacy levels.

Still, there could be merit in looking into the relationship of sex and FHL. Girls and boys have varying interests when it comes to what they read (Merisuo-Storm, 2006). Females were more into adventure-themed books, whereas the males often chose reading materials with expansive visuals (e.g. comics, funny books). These findings may inform future representations or formats of the health information sources of adolescents.

Table 5: Association of Functional, Interactive, and Critical Health Literacy to the Sociodemographic Characteristics of the Adolescents

Socio-demographic Variables	FHL	IHL	CHL
Age	p = 0.058*	p = 0.173	p = 0.676
Sex	p = 0.155	p = 0.276	p = 0.991
Weekly Allowance	p = 0.609	p = 0.472	p = 0.798
Father's Educational Attainment	p = −0.059*	p = 0.424	p = 0.062*
Mother's Educational Attainment	p = −0.033*	p = 0.321	p = 0.380

* significant at alpha 10% using Spearman's Rho

Weekly Allowance (WA) vs FHL. Weekly allowance and their FHL scores were found to observe a positive very weak relationship. As their WA increases, their FHL levels decrease. However, the association of WA to FHL is insignificant. This supports the claims made by Nutbeam (2008) which stated that basic literacy skills are still the major influence over one's health literacy, among other factors.

However, a possible explanation for the positive relationship is that the adolescents are healthy, especially those coming from the higher income families due to their access to health services and capability to afford nutritious food items from numerous sources. This could affect their need to understand health information.

Father's Educational Attainment (FEA) and Mother's Educational Attainment (MEA) vs. FHL. The correlation between FEA and FHL appeared as significant with a p-value=0.0594 (p <0.1) but the degree of association was negative and low. The same goes for the relationship of MEA to FHL. As parental educational attainment increase, FHL scores of adolescents increase.

Parents are the children's first teachers and role models. When they finish education levels that are beyond high school, they tend to be more hands-on and become better teachers to their children, given a higher level of knowledge (Gratz, 2006). Because of this, children may become more informed and their literacy skills are enhanced. They have better knowledge on and absorption of health information (Alseraty, 2015).

Interactive Health Literacy (IHL)
Age vs. IHL. The relationship between age and IHL appear to be positive with an almost negligible association (Table 5). This implies that as adolescents get older, their ability to voice out their opinions on health and ask questions gets better.

Their communication capacities and their social skills become key roles that they must hone. Adolescents become more socially flexible as they grow older (Hopkins, 2014). Instead of having just one peer group which they interact with and conform to, they explore more genres and fields according to their interests. They also become more exposed to adults like teachers, coaches, and school health officials. This widens their social groups and ultimately develops their ability to interact and communicate with different types of people. Hence, as they progress through adolescence, they would become more comfortable to approach health practitioners to garner the health information they need.

Sex vs. IHL. The sex of the adolescents and their IHL scores were found to have a positive relationship though almost negligible. Sex does not have much impact towards the IHL of an individual. This can also be observed in the mean IHL scores of the male respondents (1.841) and female respondents (1.836). These findings parallel the claims made by Toci et al. (2014) and Jeong and Kim (2016) that sex does not have a clear relationship with health literacy.

However, when looking at the social skills of each gender, some differences could be observed. Females are more socially adept than males (Abdi, 2010). Girls have more social skills, whereas boys concentrate their efforts more on action-based behaviors and externalizing what they feel. Pecjak, Melita, Milena, Jana, and Cirila (2009) stated that female students have more social capacities than male students. With these in mind, it can be seen that both genders have different ways of socializing and gaining experience through interpersonal communication. But

in their health-seeking behaviors, they become similar, making their genders insignificant for comparison (Jeong & Kim, 2016).

Weekly Allowance (WA) vs. IHL. The correlation between weekly allowance of the adolescents and their IHL levels was found to be positive but almost negligible and insignificant. This means that WA has little effect over their IHL scores.

Communication among adolescents is found to be influenced more by external concepts such as forming and maintaining emotional bonds among peers, common interests, and trust formation (Lenhart, 2015). They may discuss health concerns over their purchased snack items and hygiene products but it may not be a top priority at this time.

Father's Educational Attainment (FEA) & Mother's Educational Attainment (MEA) vs. IHL. The IHL scores of the adolescents have a positive relationship with the FEA, however, their association remains negligible and insignificant. There were similar results for the relationship of MEA with IHL.

This could be explained by the greater health knowledge that parents have and communicate to the adolescent about concerns like pregnancy, sexually transmitted infections, and diseases. However, these concerns may not be relevant to the adolescent or they may not be comfortable discussing such with their parents.

Critical Health Literacy (CHL)
Age vs. CHL. The age of the adolescents and their CHL levels have a significant positive but negligible relationship. Age, as a variable, does not have much impact on CHL levels of the adolescents.

This could be due to the decision-making of adolescents since they are still guided by significant adult figures. Adolescents are more inclined to act on impulse and engage in risky behaviors. This entails the need for adult guidance, especially when it comes to their health behaviors (American Academy of Child and Adolescent Psychiatry, 2016).

Sex vs. CHL. The Kruskal-Wallis test indicated that sex and CHL scores do not have a significant association with each other (p-value = 0.9911; $p < 0.1$). They can be considered as independent from one another since their degree of association was almost negligible.

These findings are possibly due to sex as a biological distinction and something internal to an individual (Parisod et al., 2016). Hence, a clear relationship between sex and CHL cannot be seen. This result coincides with the claims made by Toci et al. (2014) and Jeong & Kim (2016). In their studies done on different and older age groups, they also found that sex was not a significant determinant of individuals' health literacy levels. Regardless of sex, individuals will apply health information and decide towards better health outcomes when the need arises.

Weekly Allowance vs. CHL. The weekly allowance of adolescents did not have a significant relationship with their CHL scores. The test for their correlation produced a p-value=0.7977 at $p < 0.1$ and their association is almost negligible.

According to Goldstein and Vo (2012), income classes spend relatively the same amount when it comes to healthcare and health insurance. Hence, income class does not significantly influence health-related decisions of individuals. This notion is amplified by the fact that the

respondents for this study are adolescents, individuals who give priority to things other than their health (McNeely and Blanchard, 2009).

Father's Educational Attainment (FEA) vs. CHL. The relationship between FEA and the CHL scores of the adolescents was positive and significant with a p-value= 0.0621 ($p < 0.1$). An increase in the FEA induces an increase in the adolescents' CHL levels.

Fathers have a direct impact on their children's health (Rosenberg & Wilcox, 2006). Their education has a relatively larger effect on the children compared to the mother's education (Ermisch & Pronzato, 2010) since this paves the way for the application of health information the adolescent would come to know or be taught. Jocson (2012) stated that Filipino fathers have more authority over their children. This could contribute to the amount of impact they have over adolescent health, thus, decreasing their life risks (Yogman & Garfield, 2016).

Mother's Education Attainment (MEA) vs. CHL. The relationship between MEA and CHL scores was positive but negligible with a p-value=0.3798 ($p < 0.1$). Their relationship is insignificant.

A probable reason for this is that educated and working mothers may spend more time at their occupations instead of at home (Ermisch & Pronzato, 2010) and thus, are not much of a resource of health information that the adolescents can use when necessary. Also, they may be dependent on their mother's nurturance and thus, feel there is no need to apply what they know since there is a significant person nurturing them.

Relationships of Social Media Exposure of the Adolescents to their Functional, Interactive and Critical Health Literacy Levels

SME vs FHL
FHL and adolescents' SME scores have a positive but negligible relationship with a $p = 0.7414$; $p < 0.1$ (Table 6). This implies that higher SME corresponds to lower FHL levels and does not have a strong impact on the adolescents' FHL.

A possible explanation for this could be in the degradation of the literacy skills of adolescents with the amount of social media they digest on a regular basis. Woods (2014) opined that the syntax used in social media communication such as word/phrase shortcuts and complete misuse of complex words, and the self-centered perspectives by social media users contribute to the downgrading process of literacy skills. On the other hand, Rheingold (2014) argues that the effect of social media usage, whether it will be positive or negative, solely depends on what the individual knows about it. With these contrasting claims, social media, as a variable, is worth looking into in future studies.

Table 6: Association of Functional, Interactive, and Critical Health Literacy to the Social Media Exposure and Perceived Health Status of the Adolescents

Variables	FHL	IHL	CHL
Social Media Exposure	$p = 0.741$	$p = 0.004$*	$p = 0.080$*
Perceived Health Status	$p = 0.250$	$p = 0.223$	$p = 0.019$*

significant at alpha 10% using Spearman's Rho

SME vs IHL

Adolescents' SME scores were found to be positively associated with their IHL scores ($p=0.0035$; $p < 0.01$). This implies that higher SME associates with higher IHL levels.

IHL focuses on one's ability to converse about health problems (HLCE, 2015) and communication is a key element. Given that, the benefits of social media can be seen. Moorhead et al. (2013) reported that patients use social media to share health messages and information through chat rooms, discussion fora, instant messaging, and online consultations with medical professionals. According to the Healthcare Information and Management Systems Society (2016), social media as a medium can increase patient-physician communication. Through it, patients become more encouraged to inquire, ask questions, and actually converse with their health practitioners online. They may even converse with peers who have similar health concerns or ask adults they trust about certain health issues. It is in this way that their IHL increases through social media usage.

One of the strongest aspects of social media is its capacity to practice viral social marketing – the ability to maximize the number of people being advertised and informed with a minimal amount of cost. Should this be applied to the spreading of health information, social media would acquire a vital role in health education, promotion and outreach programs (Gosselin & Poitras, 2008). An example of this is the increase in awareness in condom usage in Turkey through viral marketing and other social media techniques (Purdy, 2011). Hence, social networking sites have the capacity to increase the frequency of peer-to-peer communication, peer-to-adult communication; and ultimately enhance an individual's IHL levels.

SME vs CHL

The adolescents' SME scores and CHL levels have a significant positive relationship with a p-value=0.0798 ($p < 0.1$). The more exposed the adolescents are to social media, the higher their CHL levels become.

Social media has the capacity to augment health education, health promotion, and health-related outreach programs through viral social marketing (Gosselin & Poitras, 2008). It can provide health and exercise information that adolescents need in order to carry out proper health-related behaviors. Their health education at school can be augmented through images, uploaded videos and stories about good nutrition and fitness programs.

Centola (2014) stated that social media is viewed as a new component which can be utilized in the field of medicine and health. Its existence has actually helped in the development of more medical research opportunities. With the use of social media sites as carriers of health information, a novel and modern method of spreading valid information was created. Many are aided in knowing the health facts they need to maintain their good health (Centola, 2014). Social networking sites like Facebook and Twitter have been found to induce positive changes in health-related behaviors and outcomes (Laranjo, Arguel, Neves, Gallagher, & Kaplan, 2014).

Relationships of Perceived Health Status of the Adolescents to their Functional, Interactive and Critical Health Literacy Levels

PHS vs FHL
The relationship between the adolescent's PHS and their FHL was found to be a negative negligible association with a p-value=0.2504 (p < 0.1), with the degree of their association at r=-0.065. PHS does not have a significant impact on the adolescents' FHL.

The result could be due to the adolescents' positive perception of their health and thus, they do not see the need to understand health information or they may feel that they have adequate information already. However, Amoah, Phillips, Gyasi, Koduah and Edusei (2017) found that if the street youth perceive themselves as being in poor health, they also have low health literacy and vice versa.

PHS vs IHL
The adolescents' PHS scores have a positive weak relationship with their IHL scores. The p-value=0.2228 (p < 0.1) and the relationships is not significant.

Their relatively high PHS scores imply that they view themselves as generally healthy. They do not see the need to inquire about and discuss their health status with their peers, adults and health professionals since they feel there is no reason to do so.

PHS vs CHL
The adolescents' PHS scores have a significant positive correlation to the CHL scores with a p -value=0.019 (p < 0.01). The higher the PHS, the higher the CHL scores.

In a study for adults and elderly, Furuya, Kondo, Yamagata and Hashimoto (2013) found the same trend between PHS and CHL since CHL refers to the capacity to improve or maintain the health of individuals. Through proper health education, health status would relatively increase. They become more aware of the degree of their well-being and their behaviors change accordingly, taking into account just how much they have to do in order to maintain being healthy by their standards. Adolescents are healthy and they may wish to maintain their good health in order to reach their future goals by applying appropriate health information.

Regression Analysis
The correlation analyses made for FHL, IHL and CHL and the corresponding variables paved the way for its logistic regression analysis. A mathematical model was made which could ideally predict health literacy. When future quantitative values are plugged into the model, the equated FHL/IHL/CHL score would then range from 0 to 1, indicating 0 as the lowest possible score and 1 as the highest.

Logistic regression analysis for functional health literacy. In the case of adolescent FHL, the only significant variable which made it to the model was age (Table 7). Participants' predicted FHL is equal to -2.440 + 0.150AGE (years). Their FHL increased 0.150 for each year in age. Age of the adolescents is a key predictor when determining their FHL levels. Future quantitative values pertaining to age would be the eligible data for the prediction of the FHL levels of adolescents.

Table 7: Effect of Age on the Functional Health Literacy of the Adolescents

Variable	Coefficient
Age	0.150 (.091)*
Constant	-2.440
R^2	0.006
n=314	

*$p<.05$

Logistic regression analysis for interactive health literacy. For adolescent IHL, social media exposure came out as a significant variable (Table 8). The adolescents' predicted IHL is equal to -0.130 + 0.204SME. Their IHL increased 0.204 for each increase in SME. Hence, SME is deemed as an indicator of or a component when predicting the IHL levels. SME scores would be the most essential quantitative data required in order to make the IHL regression model work in future research endeavors.

Table 8: Effect of Social Media Exposure on the Interactive Health Literacy of the Adolescents

Variable	Coefficient
SME	0.204 (.067)*
Constant	- 0.0130
R^2	0.029
n=314	

*$p<.05$

Logistic regression analysis for critical health literacy. In the case of CHL, there were no significant variables which made it to the model. This is due to the correlation coefficients not being strong enough to conjure a p-value significant enough to become an indicator. Hence, for this study, no logistic regression model for CHL was derived.

Conclusion and Recommendations

A total of 314 respondents from two private high schools completed a self-administered questionnaire. Results showed that the respondents' exposure to social media was relatively high. The adolescents perceived their health status as good. They had high FHL scores while their IHL and CHL levels are adequate. FHL had significant relationships with age and educational attainment of both parents. IHL had a significant association with social media exposure. Lastly, CHL was found to be significantly correlated with the educational attainment of fathers, social media exposure, and perceived health status.

The study extends the findings on adolescent health literacy by looking into the specific types of health literacy in junior high school students in a developing country. It was able to present the influences of age, parental educational attainment, social media exposure and perceived health status to the specific health literacy types. Further, logistic regression reiterated the effect of age on functional health literacy and the effect of social media exposure on interactive health literacy.

The study does not directly address the effects of parents on adolescent health literacy. Moreover, the indicator of their income class is limited to their weekly allowance. It also does not give explanations for other possible factors, such as academic performance and self-efficacy, which could contribute to the health literacy levels of the respondents. Lastly, this study only features selected respondents from two schools to represent adolescents.

Future research on adolescent health literacy may include other variables such as parenting styles, socioeconomic class, peer influence, and school influence to expound associations with the different types of health literacy. Also, specifying health literacy content (e.g. mental health literacy, sexual health literacy) could help in understanding adolescent health priorities. A qualitative approach may be included to enrich the data on perceived health status and social media exposure. It is also recommended that other forms of measurement for perceived health status be considered.

Educational and health institutions should propagate health literacy to high school students since this can enhance their health-related behaviors as they mature. Intervention and education programs in various forms and platforms on various health literacy content relevant to the youth would contribute to their awareness and readiness for various types of health situation.

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