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RESEARCH ARTICLE

How Health Literate are the iGeneration Filipinos? Health Literacy Among Filipino Early Adolescents in Middle Schools

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Abstract: This paper describes the level of health literacy among middle school students in the Philippines. It specifically determines their level of knowledge of health as well as their health-related skills, attitudes, and values. This paper assumes that middle school children, being part of the iGeneration, will have a higher level of health literacy owing to their better access to Internet technology. School-age children in the Philippines who were born in the early years of 2000 have grown up with high technology such that they have at their fingertips all sources of knowledge about health. Aside from the Internet, students are also taught different health and nutrition-related knowledge in many school subjects, including science, health, and physical education. The study involved 855 middle school students (grades 6 to 9) selected through purposive sampling. They came from 12 private/public elementary/junior high schools, urban/peri-urban/rural areas, and places in the north and south of the Philippines. The results reveal that the middle school students have low to very low level of health literacy. This presents a bigger challenge to the basic health education in the country. Middle school children may not necessarily consider health as a pressing priority in their daily lives. Instead of familiarizing themselves with health topics, they are preoccupied using the Internet for other purposes. Thus, this necessitates basic education to carefully rethink how best to integrate health literacy in the curriculum using different strategies of learning and teaching.

Keywords: Filipinos, Filipino youth, health, health education, health literacy, iGeneration

Reports have indicated that health literacy is low in the Philippines. The observed low level of health literacy is related to the vulnerability to risk of communicable and non-communicable diseases (Son, 2009). The Philippine Center for Health Research and Development of the Department of Science and Technology (PCHRD-DOST, 2014) indicated too that the low level of health literacy among Filipinos is a significant factor to the increase in morbidity and mortality statistics. Addressing the country's problems on poor health literacy is a necessary pre-condition to foster quality healthcare and improved health outcomes (McCormack, 2009) particularly among the vulnerable and at-

risk population such as the elderly, the youth, and children.

School-age children in the Philippines who were born in the early years of 2000 have grown up with high technology and the era of information such that they have at their fingertips all sources of knowledge on science and health. In fact, the Young Adult Fertility Survey in 2013 revealed that 78% of the roughly 19,000 respondents claimed to own a mobile phone, 59% use the Internet, and 53% own a social networking site (Demographic Research and Development Foundation & University of the Philippines Population Institute, 2014). The urbanized Filipino early adolescents of the 21st century belong to the iGeneration, as they are the leading consumers of electronic communications technology (Rosen, 2010). The "i" in iGeneration pertains to the type of mobile technology (such as the iPad) and for being "individualized" in the way it is used.

The adolescents are in the Information Age that with the Internet, they have access and could source unlimited information. Also, they are avid users of computer algorithms like games and products of artificial intelligence, such as those employed in science shows and audiovisuals from the web. Thus, they consume information from the Internet and high technology commodities in the same way they consume instant food. They access all sorts of information instantly, including those that pertain to health. A daily dose of health and science information could be obtained by children through the Internet and high technology media such as those that have to do with illness prevention and those that will keep them mentally and physically well. The World Bank (2016) reported that there was a rapid increase in the percentage of Internet use among Filipinos. In 2009, only about 9% of the population was able to access the Internet. However, in 2016, this increased rapidly to 55.5%. Such data is indicative, indeed, that Filipinos, especially the younger generation, are Internet-wired (World Bank, 2016). Given this backdrop, it is then worthy to ask the question, are the iGeneration Filipino adolescents health literate?

Previous studies suggest that the achievement of a level of health knowledge could enable an individual to choose options that will continue to promote a healthier lifestyle (Hernandez and Pleasant, 2013). There have been several factors identified by Sentell, Dela Cruz, Heo, and Braun(2013) that promote a high level of health literacy, which includes family and community, women, personal experience, and local culture (see also McCormack, 2009). Other factors include support from the government (Ignacio et al., 2014), social marketing (Son, 2009) and educational attainment (Ignacio et al., 2014). Moreover, the results of recent studies provide compelling evidence in support of the significant role of the school (Johnson & Barrett, 2017) in increasing health literacy.

The Philippine schools, particularly at the basic education level, permit the utilization of information and communication technology to aid in the teaching and learning processes. Students in the elementary and secondary schools though are not allowed, under certain circumstances, in the classroom to use their i-technology gadgets, specifically their cellular phones. Although there is a restriction in the use of i-technology (e.g., iPad and iPhone) during classroom instructions, students could use computers in the laboratory as learning resource where they can access a wide range of audiovisual materials on health and science. A rich resource for teaching and learning of the sciences, including health, is readily available on the Internet for students. School children are taught science and health, MAPEH (music, arts, physical education, and health), and PE (physical education) during their early adolescents.

Health literacy is then systematically acquired primarily in the classrooms of Philippine schools using the Socratic method, technology-aided instructions, and other modalities of teaching. Because of the integration of health in the basic education curriculum, one can also safely assume that students should acquire a high level of health literacy. The study of Sukys, Cesnaitiene, and Ossowsky (2017) concluded that exposure to health-education related subjects could lead to high literacy level. Specifically, they found out that because of exposure to health-related knowledge, children are able to "access and understand" practical health concepts, and thus, enabling them to put them into actual use. Despite such findings, their study noted that university students registered a low level of health literacy notwithstanding the integration of health in the curricula.

A report on local action on health inequalities (Public Health England and UCL Institute of Equity, 2015) highlighted the importance of health literacy in bridging health inequalities. In the said report, it was indicated that people with low financial and

social assets are more likely to have a low level of health literacy. Thus, to enable a generation to be more conscious and conscientious in living a healthier lifestyle regardless of economic and social status, instruction has to start early on in both public and private schools when the foundational knowledge on health and the basics of medical science could already be acquired and applied.

Review of Literature

Definition of Health Literacy

Ratzan (2001) defined health literacy as a functional literacy or the "health education meeting minimal standards for all school grade levels" (p. 210). The earlier definition suggests that health literacy has been treated as functional literacy. The increased attention by government agencies, health organizations, and various institutions expanded the understanding of health literacy from simple technical definition to a practical and critical skill to promote personal health. Hence, most recent literature argued that health literacy is the ability to exert control over the determinants of health (Estacio, 2013; Hernandez and Pleasant, 2013). Health literacy should be treated as a critical skill for individuals to obtain, understand, process, and make use of health knowledge and information in making appropriate decisions about their health (Brabers, Rademakers, Groenewegen, van Dijk, and de Jong, 2017; Connelly and Turner, 2017; Institute of Medicine, 2009). The World Health Organization (2009) further defined the concept as the "the degree to which individuals and communities have the capacity to obtain, process, and understand basic health information and services" needed to make appropriate health decisions" (p.2).

There are different ways to measure health literacy. Recent studies on health literacy examined capacity to understand, access, judge, and apply health information on three aspects of health management, namely, prevention, promotion, and curative intervention (e.g., Denuwara & Gunawardena, 2017). Others look at health literacy in terms of its theoretical, practical, critical, cognitive, and social significance (Paakkari & Paakkari, 2012).

Promoting Public and Personal Health

Previous research has documented the incalculable economic implication of the low level of health literacy of a country. Poor health literacy means a decline in access to healthcare and quality of care. For this reason, the government does not optimize increasing health expenditure (Agarwal, Shah, Stone, Ricks, & Friedlander, 2015). Hence, it also proffers an immense challenge in the delivery of effective healthcare and poor health statistics (Berens, E., Vogt, D., Messer, M., Hurrelmann, K., & Schaeffer, D., 2016; Rasu, Bawa, Suminski, Snella, & Warady, 2015).

Understanding the level of health literacy in different age groups is critical to promote effective public health interventions (Berens et al., 2016) and even health literacy campaign. These interventions should target areas with a low level of education and are relatively poor to increase coverage (Das, Mia, Hanifi, Hoque, & Bhuiya, 2017). Conversely, some studies argued that there is a need to recognize children as active health literacy practitioners (Fairbrother, Curtis, & Goyder, 2016). Thus, they must be given consideration in planning for health literacy interventions and policies.

Several publications have appeared in recent years documenting the major implication of the level of health literacy of individuals to their personal health (Connelly & Turner, 2017; Ragsdale & Cross, 2016). An individual with a high level of health literacy is believed to exert more effort to access, process, and understand basic health information and services (Elbash & Coustasse, 2016; Institute of Medicine, 2009). Thus, it can be assumed that they make appropriate health decisions (Institute of Medicine, 2009; Brabers et al., 2017) and seek medical help if needed (Berens et al., 2016). Likewise, they are not passive recipients of health professionals' prescriptions but are involved in medical decision-making (Brabers et al., 2017). High level of health literacy abets an individual in promoting health beliefs, attitudes, and behaviors (Fernandez, Larson, & Zikmund-Fisher, 2016). This could mean that those with low health literacy have more difficulty in accessing available health services (Das et al., 2017), adhere to medication and prescription from health providers (Lee, Yu, You, & Son, 2015), and have poor health outcomes (Connelly & Turner, 2017; Ragsdale & Cross, 2016).

Facilitating Factors to Improve Health Literacy

Recent studies suggest different factors that influence the development of a high-level health literacy. Sentell et al. (2013) have found four major considerations. Firstly, these include the role of the

family and the community as the first source of health information of a child. Secondly, there is a need to consider the role of women, particularly the mother, in the family. Mothers do not simply transmit health information, but they also ensure that children are able to understand and process such kind of information. Thirdly, personal experiences and social relationships also influence the understanding of health information. For example, getting afflicted with a particular illness should have provided individuals with information on the causes and remedies of ill health, which can be helpful in preventing its recurrence. Lastly, the prevailing social structures, cultural beliefs, customs, and traditions are believed to influence an individual. Some studies suggest that we should also be concerned about power relations and unfair social structure in society (Estacio, 2013). The lack of socio-economic support from the government and poor public health policy could result in a poor level of health literacy (Ignacio et al., 2014). Thus, the underprivileged members of society and those with a low level of educational attainment have a lower level of health literacy and poorer health outcomes.

Some studies, meanwhile, present evidence asserting that social marketing is also an effective tool to raise health awareness about a particular health issue and provide information to the issue of price, access, and other institutional support (Son, 2009). Aside from this, some pieces of literature present substantial evidence on the role of technology to improve health literacy. The use of a mobile phone application, for instance, has been found to contribute to the increasing acquisition of health knowledge and information.

Recent studies suggest that the important role of the school in addressing problems in health literacy should also be given emphasis in health intervention and advocacies. Some references make a case for the role of educational experience in improving health literacy among students (Johnson & Barrett, 2017). The school could teach contemporary health issues in the classroom (Ormshaw, Kokko, Villberg, & Kannas, 2016; Jacque, Koch-Weser, Faux, & Meiri, 2016; Marks, 2012), thus, resulting to improved health-promoting attitudes and behavior. The school provides ample opportunity for students to understand and process health information to promote a healthier lifestyle (Shih, Liu, Liao, & Osborne, 2016). Not only has the school provided knowledge and information on physical health but also mental health literacy. Thus, it contributes to the promotion of mental health at large (Rahman, Mubbashar, Gater, & Goldberg, 1998). The available evidence seems to suggest how the school can help promote health literate citizens (Marks, 2012). By doing so, the school could help in the achievement of public health goals (St. Leger, 2001) and help promote health equity.

Existing literature provides different conditions to maximize the role of the school to promote health literacy. Some studies suggest that this could be done through topic prioritization and effective curriculum planning tool (Ormshaw et al., 2016). Others highlight the role of practical, active, dynamic, and developmentally sensitive teaching strategy as key to engage and develop a meaningful understanding of health knowledge (Johnson & Barrett, 2017; Ueno et al., 2014). Several studies promote the active engagement of students to construct meaning from health information through their personal experiences (Fairbrother et al., 2016; Renwick, 2014). It can be inferred from existing evidence the critical role of educators in promoting health literacy among their students (Bruselius-Jensen, Bonde, & Christensen, 2017; Cummings & Obel-Omia, 2016; Milin et al., 2016). Yet, the role of education could only be capitalized through continuous training and schooling to acquire necessary knowledge and skills to take full advantage of health literacy enabler among their students.

The Role of Learning Resources in the Acquisition of Health Literacy

Based on the evidence currently available, it seems fair to suggest that the achievement of a level of knowledge on health science could enable an individual to choose options that will continue to promote healthier life (Hernandez & Pleasant, 2013). Several studies suggest that another effective approach to promote health literacy should not only focus on the content but the type of medium used to deliver it (Christensen, Bønnelycke, Mygind, & Bentsen., 2016; Hernandez & Pleasant, 2013; Canadelli, 2011). The promoter of health literacy should also consider the appropriate and applicable medium by which an individual would be interested to discover, explore, and understand health information (Hernandez & Pleasant, 2013). The research gap in identifying other alternatives to deliver health literacy could be because most health literacy studies focus on adults. Likewise,

there have been very few studies associating child health literacy and health status (Shih et al., 2016).

Health Literacy Measures

More than 85% of the existing health literacy scale has been guided by classical test construction theory (Nguyen et al., 2015) that does not correspond to the advancing conceptualization of health literacy (Pleasant, 2014; Pleasant & McKinney, 2011). These studies suggest the development of a universally acceptable definition of health literacy and measurement tools. In comparison, recent literature promotes the idea that health literacy definition and measurement are content-specific (Duell, Wright, Renzaho, & Bhattacharya, 2015; Stonbraker, Schnall, & Larson, 2015; Batterham, Hawkins, Collins, Buchbinder, & Osborne., 2015), age-group specific (Berens et al., 2016), and should take into consideration the community characteristics (Elsworth, Beauchamp, & Osborne, 2016).

More recent attention has focused on understanding the confluence of the health literacy approach and its measurement. Soellner, Lenartz, & Rudinger (2017) identified two major approaches in dealing with health literacy. First is the clinical approach, and the second is the public approach. On the one hand, the clinical approach treats health literacy as the ability to read and understand medical prescriptions and identify medicines, uses, contents, and other things that are required to be a successful patient. However, some studies suggest that available health literacy measurement tools that subscribe to this approach correspond to a restricted set of conceptual dimensions and measures (Haun, Valerio, McCormack, Sørensen, & Paasche-Orlow., 2014). More so, these studies appraise some existing tools to be limited as they only measure the level of acquisition and the level of understanding, they are content-specific, and are only aimed at a specific population (Pleasant, 2014; Pleasant & McKinney, 2011). On the other hand, the public approach deals with health literacy as extensive and goes beyond the patient categorization (Nutbeam, 2000). This corresponds to the generally accepted definition of health literacy by Nutbeam (1998) as a set of cognitive, social, and motivational skill "to gain access to, understand and use information in ways that promote and maintain good health" (p. 357).

Likewise, further advancement of the public approach, which is exemplified by the Nutbeam (2000) model, listed three dimensions of health literacy that are to be considered in test construction. The first dimension is functional literacy or the acquisition, understanding, and processing of health information. The second dimension is interactive literacy or the ability to engage in the health-related environment and be able to draw out meanings and learning from varied forms of communications. The third dimension is the critical skill or the ability to assess the reliability and objectivity of health information and accessibility of health services, health policies, and the health care system in general. This model suggests that a valid and reliable health literacy tool must be able to measure the functional, communicative, and critical health literacy skills. By contrast, Soellner et al. (2017) argued that this model ignored other key components of health literacy and propose a nine-cluster model of health literacy measure. This model includes measurement of an individual's self-regulation, self-perception, proactive approach to health, basic literacy and numeracy skills, information appraisal, information search, health care system knowledge and acting, communication and cooperation, and beneficial personality traits.

It is now well established from a variety of studies that not only the conceptualization of health literacy is advancing but also health construct that has to be considered in constructing health literacy measures. Although several facilitating factors have been associated with health literacy, quite a few practical questions arise when dealing with the degree of its influence to improve health literacy level. The impact of the different factors, particularly school and interactive museums, could only be ascertained by a valid and objective health literacy measurement and tool. However, to date, there have been more than a hundred available health literacy measures, and all tools have been found to have inconsistencies and inefficiencies (Stonbraker et al., 2015). This limitation could be resolved by the active engagement of health literacy researchers, practitioners, and members of the public to create a generally accepted definition and measurement that should be validated by rigorous scientific approach (Pleasant, 2014).

Conceptual Framework

This paper aimed to describe how health literate the students are in middle schools in the Philippines, their knowledge of health, as well as their health-related skills, attitudes, and values. The development of the

instrument used to determine the health literacy of urbanized young adolescents in both the public and private elementary and secondary schools is premised on the health science curricula.

McCormack's (2009) framework guided the development of the assessment tool for determining health literacy. This framework maintains that health literacy, or the absence thereof, may be influenced by several socio-demographic factors, prior knowledge, health-related stimuli, and resources. In other words, the level of health literacy depends on the person's socio-demographic background (age, gender, income), exposure to health-related stimulus (brochure, exhibit, conversation with doctors), resources (income, social capital, social support, culture, language, education), and prior knowledge (vocabulary, conceptual knowledge of healthcare). Although it is based on the said framework, this study focuses mainly on the cognitive aspects (health literacy) as a consequence of classroom instruction and to some extent exposure to health science information from the Internet and visits to interactive science museums, exhibits/ expositions, and socialization in school and at home. However, this paper, which is descriptive in purpose, aims to provide a picture of the health literacy level of middle school-age students.

Using McCormack's model, this paper argues that resources (access to the Internet and health education) and exposure to a health-related stimulus (health-related educational materials given at schools, the Health Science on the Go Project Exhibit, and health-related materials on the Internet) increase health literacy among the students. Health literacy, in this study's context, relates to students' knowledge on nutrition, consumer health, personal health, prevention and control of diseases, and substance use and illegal drugs. Items on health literacy are framed within the health education curriculum mandated by the Department of Education of the Philippines and the Health Science on the Go Project of the UNILAB Foundation which is a science and health mobile exhibit project. This NGO-funded mobile exhibit aims to increase awareness among students regarding the value of taking care of one's health. Because of the resources and the exposure of the students to health-related stimuli, students presumably should be able to acquire health knowledge, and such acquisition should be helpful to students in making informed decisions about their health. However, such decisions will be dependent on how the students make meanings about the knowledge that they have acquired.

Methods

Prior to the construction of the instrument for the study, a desk review of existing published and gray literature, such as the science and health curricula of the Department of Education, was conducted to identify health literacy indicators. After which, a workshop was conducted to finalize test items and survey questions, which was participated by teachers of Science and Health, Physical Education, Health, and Music (PHEM), and Physical Education (PE) in the intermediate level (Grade 6) and junior high school

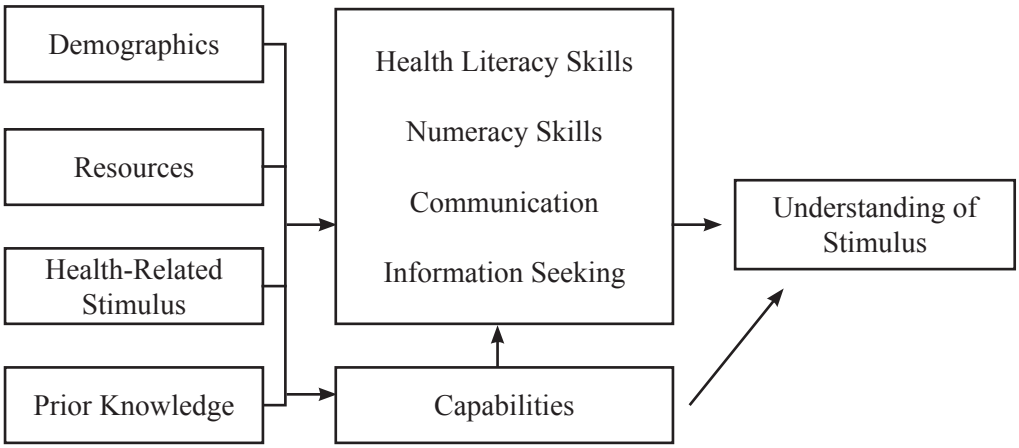

Figure 1. Conceptual Framework for Individual Health Literacy (Adopted from McCormack's, 2009)

(Grades 7, 8, 9) as well as the curriculum specialists and health promotion advocates. Through such workshop, the construct and content validity of the instrument was established.

The health literacy instrument is composed of: (1) a teacher-made, multiple-choice type of test to measure the students' knowledge on health and (2) a survey questionnaire to collect health information on facilities, service providers, sources of information, and personal health conditions. Thus, the instrument generates literacy information related to physical health and personal hygiene, which are the relevant topics among elementary and secondary grade learners as part of their learning exercises on their subjects in human health and science.

The knowledge test is specifically for identifying the level of health literacy. Scores of the knowledge test (number of correct answers in all the five dimensions of health) are used to identify the level. The highest possible score for the knowledge test is 10. For purposes of identifying the level, the study has assigned the following scoring. A total score of 1–4 means very low, 5–6 means low, 7–8 means high, and 9–10 means very high. This means that higher scores suggest a higher level of health literacy. The health literacy tool was constructed and validated, making sure that items are age-appropriate and developmentally sensitive. The items were constructed in English and Filipino. The students accomplished the tools through a tablet, smartphone, or a computer.

The tool developed for the study is called the Health Literacy Test for Adolescents in Middle Schools (HeaLTh-AiMS), which is composed of a test and a survey. The knowledge test component has five health dimensions (HD): HD-1 nutrition, HD-2 consumer health, HD-3 personal health, HD-4 prevention and control of diseases, and HD-5 substance use and illegal drugs. It employed the item analysis techniques in test development to establish its measurement properties. The validation procedure indicates the appropriateness of the test items for middle school students. Most of the items have an average level of difficulty and with a satisfactory level of discrimination index. These suggest that HeaLTh-AiMS could effectively differentiate between students who do well on the overall health literacy test and those who do not. The survey part has four aspects of health literacy-related knowledge (HR): HR-1 health facility, HR-2 health service provider, HR-3 awareness on sources of knowledge about health facility and health service provider, and HR-4 personal health condition.

Also, an end-user participatory impact assessment approach was employed in the design and development of appropriate health literacy assessment instrument. This study and its related activities engaged end-user participation from its inception, instrument development, to health literacy profiling, and impact assessment. The stakeholders (i.e., school administrators, curriculum experts and teachers of health science and physical education, recipient schools, a local organization advocating for health promotion in schools) participated and collaborated in the construction, validation, and assessment procedures. The study also engaged discipline specialists in impact assessment and evaluation of development projects, developmental psychology, education and literacy, and in educational test construction and validation. These specialists are all involved in basic and higher education institutions that are currently serving either as administrators, teachers, or researchers.

School-age children and adolescents, specifically those in Grades 6, 7, 8, and 9, were purposively selected to participate in the study as they belong to the iGeneration and also that, either their school has a computer laboratory that is used for science classes, they have had field trips to science museum, or those who personally own an electronic device like cellphone and tablet. The conduct of the study was approved by the De La Salle University Ethics Review Office (DLSU-ERIO) specifically to assess health literacy among adolescent students who have had experiential learning through classroom instruction, surfing the Internet (e.g., viewing science videos, films on health), and visits to interactive science exhibits/expositions.

The study participants were obtained through purposive sampling. They were screened for computer literacy to indicate their inclusion to the iGeneration group and to make sure that they will be able to accomplish the survey accurately as the test required them to use the Internet through a computer, tablet, or smartphone. They came from 12 private/public both elementary/junior high schools, urban/peri-urban/rural areas, and places in the north and south of the Philippines. Three schools are located in the National Capital Region and nine from the provinces, of which three are from the north and six are from the south of the country. Only two of the schools are private.

Table 1 presents the profile of the study participants from the selected middle schools in the Philippines. Over half of the study participants are females. Likewise, half of them are 12–13 years of age. More than half of the students indicated that their mother tongue is Tagalog, which is mainly spoken at home with parents and sibling, and almost half reported that Ilocano, Kankana-ey, Bicolano, Bisaya, Cebuano, Maranao, and Maguindanaoan are their mother tongue.

Table 1
Middle School Student Profile

Grade Level	F	%
6	283	26.08
7	221	25.84
8	194	22.69
9	217	25.38
Sex		
Female	506	59.18
Male	349	40.81
Age		
10-11	189	22.10
12-13	423	49.47
14-15	226	26.43
16-17	17	1.98

N=855

Results

Is the iGeneration of Filipino Adolescents in Middle School Health Literate?

It can be inferred from Table 2 that students in middle schools, although health literate, have a low to very low levels of such literacy. Results of HeaLTh AiMS Test show that the iGeneration of Filipino adolescent students scored low on three of the five dimensions of health literacy, such as in nutrition health (M = 4.72), consumer health (M = 4.57), and substance use and illegal drugs (M = 4.31). The adolescent students obtained correct answers to only four or five of the items in each of these three dimensions of health literacy. Moreover, there is a very low level of literacy in the other two dimensions of health literacy which are on personal health (M = 3.62) and on the prevention and control of diseases (M = 2.99). The middle school students obtained only two or three of the items each of these two dimensions of health literacy.

Table 2
Level of Health Literacy in Middle Schools (N=855)

	Mean	Interpretation
(HD-1) Nutrition	4.72	Low
(HD-2) Consumer Health	4.57	Low
(HD-3) Personal Health	3.36	Very Low
(HD-4) Prevention and Control of Diseases	2.99	Very Low
(HD-5) Substance Use and Illegal Drugs	4.31	Low

Health Literacy Level: 8-10 Very High, 6-7.99 High, 4-5.99 Low, and 1-3.99 Very Low.

Most students obtained four to five correct answers out of 10 items about the use of health knowledge particularly in nutrition health that includes the proper classification of food, the micronutrients, the digestive system, and how to measure calorie intake. The low score on the test also indicated poor judgment in choosing a balanced and right amount of food intake. Also, the data suggest that the students are not able to determine proper meals that could provide them an appropriate amount of nutrition, which suggests that they do not have adequate competency to categorize food based on their nutritional values. The data likewise indicates the low level of nutrition health literacy among students in middle schools.

With regards consumer health literacy, a majority of the students again answered four to five of the 10 items correctly, which include questions on how to evaluate the best source of information, defining prescription medicine, the importance of consumer health, and the things to consider before taking prescription medicine. The data though suggest that the majority of the students could have already reached an understanding that the medical doctor is the primary source of health information and all matters concerning the intake of drugs and prescription medicines. However, very few adolescent students were able to define what consumer health is, discern when to take antibiotics, and compare prescription medicine from over-the-counter drugs. This data points to the fact that the students are still

not aware of the consumer health dimension of health and might not seek medical advice before taking antibiotics and other prescription medicines. Again, the data indicates the low level of consumer health literacy among the students.

Majority of the students were able to answer only three to four items out of 10 items correctly on the use of health knowledge for personal health, that is, with regards mental and psychological health, the body parts, the negative effects of lack of sleep and physical illness, medical examination, and dental check-up. This suggests the lack of awareness among the students, specifically with regards to mental health and of their own physical health in general. Thus, there is a very low level of personal health literacy among middle school students.

On the use of health knowledge on matters concerning illness, diseases, and outbreaks as well as on how to prevent and control illnesses, and on seeking professional help to remedy personal illness and diseases, a majority of the students is only able to answer correctly two to three of 10 items. This suggests a very low level of health literacy of students on the prevention and control of diseases.

On the use of health information/knowledge about substance use and illicit drugs, particularly its effects, remedies, and predisposing factors, majority of the students was able to answer four to five of 10 items correctly. Students were able to correctly answer items about how to handle invitation or persuasion to use illegal drugs and substances and healthy alternatives to illegal drugs and substances. The results also suggest that students would be able to handle a dilemma or a problem situation, such as when invited by a friend or acquaintance to try using illegal drugs or substances. Further, to avoid illicit drugs, they would resort to sports and other healthy activities. Overall, the data indicates a low level of literacy of students with regards to substance use and illegal drugs.

Health Literacy-Related Knowledge

Over half of the students, as shown in Table 3, know of the available health facility in their community. The most known health facility in the community is the Rural Health Unit (RHU) in rural/peri-urban areas and the Barangay Health Center (BHC) in urban areas as well as government-run or public hospitals. Both the RHU and the BHC are local government unit's (LGU) health facilities found in every barangay in the country. Known to a majority of the student participants as the health service provider is the Barangay Health Worker (BHW). The BHW is an LGU volunteer tasked to conduct health-related work in the community. BHWs' active presence as health service providers in the community made them identified with health and medical work in the area. However, a significant percentage do not have any idea on whom to ask about their health needs or whom to seek for medical aid in the community. They do not know who could provide health services in their communities, particularly those of the medical and allied medical professionals such as the medical doctors, nurses, midwives, and dentists.

Interestingly, traditional healers in the community are just as known as the medical doctors, particularly in rural and peri-urban areas. Majority of the students are also able to specify the source of their knowledge about the available health facilities and health service providers. A significant number though is still not cognizant about such matters. The family is the first source of health knowledge among adolescent students. Additionally, their mother is their primary resource of health knowledge. More than 30% of the students positively identified the school as a source of health knowledge. It is notable too that the social media was identified as a source of their knowledge on health.

In Table 4, it can be seen that the students know of the nearest health facility to their house in relation to distance as indicated by estimated time to reach the facility. They identified the health facility that could be accessed through a conventional mode of transportation in their community, such as the use of pedicab, tricycle, and motorcycle. The nearest health facility is less than 15 minutes away from their house that some students noted they could just walk to the RHU or the public hospital to avail of health services. A critical mass of students also reported that their houses are far from a health facility, the nearest government-run hospital or RHU and that, in the rural areas it is more than an hour away from their community. Thus, they need to ride a public jeepney or bus to reach the health facility.

Most students know of their health condition such that when sick, they have a preferred health facility. In relation to this, the adolescent students reported their most recent visit to such a place for treatment or medication. As shown in Table 4, almost one-fourth of the middle school students prefer the hospital when they would seek treatment for their sickness and a

quarter of them suggested the home as their most preferred place for medication. Almost one-third of the student respondents reported that they visited a health facility in the last six months. Some of the reasons for the visits in a health facility include medical check-up, at least once, due to symptoms of an illness (e.g., fever and cough), and a dental check-up.

Table 3
Knowledge about Health Facility and Health Service Provider (N=855)

Health Facility	**f**	**%**
Rural Health Unit (RHU)/ Barangay Health Center (BCH)	465	54.3
Public hospital	428	50.0
Private medical clinic	349	40.8
Private hospital	397	46.4
Health Service Provider		
Doctor of Medicine (MD)	178	20.8
Nurse	162	18.9
Midwife	137	16.0
Dentist	133	15.5
Barangay Health Worker (BHW)	376	43.9
Barangay Nutrition Scholar (BNS)	83	9.7
Traditional healer	192	22.4
Source of Knowledge on Health Facility and Health Service Provider		
Mother	492	57.5
Father	382	44.6
Family Relatives	380	44.4
School	314	36.7
Social media	329	38.4
TV	325	38.0
Siblings	192	32.0

(Multiple Responses) N=855

Most students know of their health condition such that when sick, they have a preferred health facility. In relation to this, the adolescent students reported their most recent visit to such a place for treatment or medication. As shown in Table 4, almost one-fourth of the middle school students prefer the hospital when they would seek treatment for their sickness and a quarter of them suggested the home as their most preferred place for medication. Almost one-third of the student respondents reported that they visited a health facility in the last six months. Some of the reasons for the visits in a health facility include medical check-up, at least once, due to symptoms of an illness (e.g., fever and cough), and a dental check-up.

Table 4
Access to Nearest Health Facilities

	f	**%**
Usual Mode of Transportation		
Tricycle/Motorcycle	281	32.8
Walking	208	24.3
Private Car	133	15.5
Public Utility Jeep/ Bus	117	13.6
Nearest Health Facility (Time) to House		
15 min.	394	46.0
15 min. 30 min.	221	25.8
30 min. 1 hour	83	9.7
1 hour	26	3.0
Preferred/ Recent Visit to Health Facility		
Private hospital	179	20.9
Public hospital	191	22.33
Home medication	219	25.61
Private medical clinic	117	13.6
BHS/RHU	110	12.8
Recent Visit to Health Facility		
Yes	295	34.5
No	312	36.4

(Multiple Responses) N=855

Discussion

Contrary to the assumption that iGeneration of Filipino adolescents are health literate, results of the study show otherwise. As a matter of fact, the results of the HeaLTh-AiMS revealed that there is low to a very low level of literacy on the five dimensions of health. Early adolescents have a low level of literacy on nutrition health, consumer health, and health that concerns substance use and illegal drugs. They also have a very low level of literacy on personal health and on health-related to prevention and control of diseases. In all five dimensions of health, the adolescents have more need for most relevant information related to their development such as food and nutrition, health

remedies, negative consequences of sleep deprivation, and the positive health effects of physical and social activities. These findings signal the need to rethink the health curriculum of the country's basic education focusing on those information gaps.

The results of the study likewise pose serious implications for the future well-being of Filipinos. As Clancy (2009) noted, adults with lower health literacy "had worse health care and poorer health outcomes" (p. 5). It must be noted that leading morbidity and mortality causes in the Philippines is lifestyle-related. This perhaps is reflected in the lack of consciousness and knowledge among Filipinos on how to take care of one's health. The low knowledge of nutrition health and consumer health probably explains the poor dietary behavior of Filipinos. In fact, the results of the survey indicated that many of the respondents are not paying attention to nutritional facts labels in food products. Young Filipinos too are avid consumers of junk foods. Findings of the 2013 YAFS described that young Filipinos consume "instant noodles, chips, grilled street food and carbonated drinks" (Demographic Research and Development Foundation & University of the Philippine Population Institute, 2014). Because of poor diet, many young Filipinos see themselves as either skinny or obese. This low level of health literacy perhaps has impacted the lifestyles and consumption patterns of young Filipinos, thereby resulting in negative health outcomes.

Knowledge of nutrition health is a necessary concern for adolescent students as this relates to their physical growth, nurturance, and endurance both for their academic tasks and athletic or sports involvement. With regards their knowledge on consumer health, the middle school students do need to understand more the importance of prescription medicine so that they could make the right decision on where to receive the most appropriate health information and the correct use of prescription medicines. This is especially important as young Filipinos are now becoming Internet dependent. When health problems come their way, there is a possibility that many of them would seek health information from the Internet rather than consulting a health professional. Although the use of the Internet to search health information can be beneficial, some studies point to the idea that this practice can lead to health anxiety and can potentially pose dangers as some health information on the web are "conflicting and alarming" (Singh, Brown, & Fox, 2016).

On their knowledge on substance use and illegal drugs, the adolescent student would be able to handle a dilemma or a problematic situation such as when invited to try to use illegal drugs or substances, they could desist or resist such social pressure. Yet, they need to know more about the causes and effects of taking illegal drugs and substances on an individual's life such as unhappiness, unsatisfactory relationship, long-term dependency, and lifetime addiction to alcohol or psychoactive drugs. Furthermore, middle school students must be knowledgeable of mental health problems as such has become the concern of the new millennium.

With regards to health literacy-related knowledge, the middle school students have full awareness of available health facility and its accessibility in their community. The barangay health worker is visibly known in the community, particularly in peri-urban and rural areas, as a health service provider. The adolescent students are also familiar with traditional healers in these communities. This could be an indication that the traditional healing method remains a significant aspect of the health culture in their locale. Health professionals need to tap such potential for their best practices on maintaining physical wellness and psychological wellbeing. The medical practitioners and their allied professionals, however, are not as known in the communities as the barangay health worker and the nutrition scholars who volunteer to deliver basic healthcare to the locals at the basic local government unit, the barangay. Medical doctors then have to be available and accessible to adolescents in schools if not in the communities as they are the most accurate source of knowledge on health.

Overall, this paper raises important points in regard to health literacy among the iGeneration. It also provides insights on how schools have to integrate health education, particularly in basic education. First, this paper highlighted that despite their access to the Internet and the integration of health education in basic education, the middle school students in the study had a low level of health literacy. Perhaps, there is a need for parents and teachers alike to encourage young children and adolescents to use the Internet to search for health information that will better their health outcomes. Second, health communication perhaps can tap the Internet as the mode to bring health messages across and expose more students who are presumably Internet-dependent to more health information that will

improve their health knowledge base. Third, the results of the study call for basic education to emphasize personal health and disease prevention and control as priority topics. This approach will somehow increase preventive measures rather than curative measures in addressing the health problems of the country. When children are given enough information regarding personal health and disease prevention and control, they may likely grow as economically productive adults who are able to perform tasks effectively without fear of health predicaments.

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