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Health literacy on physical therapy among senior citizens with physical disability and community health workers

Kriza G. Ganotisi*[1], Faye Angelene J. Barangay[1], Andrew A. Galang[1], Wina Frances Q. Lazaro[1], Christopher U. Rivera[1], and Ryan Dean T. Sucgang[1]

[1]Mariano Marcos State University, IN, Philippines

*Address all correspondence to Kriza G. Ganotisi at: ganotisikrizag@gmail.com

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Abstract

Introduction. This study was conducted to determine the health literacy on physical therapy (PT) among senior citizens with physical disability and community health workers (CHWs). Specifically, it identified the sociodemographic profile of the CHWs and senior citizens with physical disability, their extent of health literacy on PT as to prose, document and numeracy and how health policies, availability of PT programs, and available equipment and facilities for the rendition of PT services affect their health literacy.

Methods. This study employed a descriptive research design. The respondents of the study involved 18 CHWs and 29 senior citizens. It was conducted in Brgy. Cabuusan Currimao, Ilocos Norte, Brgy. Ganagan, and Brgy. Sangil Bacarra, Ilocos Norte. Descriptive statistics was utilized in the analysis of the data gathered specifically using frequency and weighted mean and standard deviation.

Results. The sociodemographic profile of CHWs shows most are aged 40–69, with older CHWs often excelling due to experience. The majority were women, reflecting caregiving roles but facing recognition challenges. Service length varied, with extensive experience linked to higher competency and health literacy, particularly in physical health care. Most CHWs had only a high school education, which may hinder understanding of complex topics like physical therapy. Senior citizens with musculoskeletal disabilities, such as arthritis, comprised a significant portion of respondents, emphasizing the need for specialized health literacy in physical therapy.

Discussion. The results findings highlight the need for ongoing training in physical therapy to enhance CHW competency. Gender disparities reflect societal challenges affecting recognition of women's roles. Limited education among CHWs underscores the importance of incorporating specialized health knowledge into training. For seniors, the prevalence of musculoskeletal disabilities emphasizes improving health literacy in physical therapy to counter misinformation and aid rehabilitation. Educating both CHWs and seniors could significantly improve health outcomes and disability management.

***Keywords*:** community health workers, barangay health workers, health literacy, rapid estimate of adult literacy, senior citizens with disability, short assessment of health literacy.

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Introduction

Discoveries and innovations regarding medical services and advances in health care coverage and delivery are significant aspects of quality health care. However, as suggested by US Health and Human Services Undersecretary Koh in 2013, such can be realized only if a nation addresses the challenge of limited health literacy.

Transitioning a patient from a structured rehabilitation setting to a community-based exercise program is crucial to improve compliance, and promote socialization and long-term health and wellness. As members of the community with emerging health needs, the senior citizens are also subjected to the care provided by community health workers (CHWs) . According to Banogon (2012), CHWs can provide accurate information about the extent and delivery of physical therapy services in the various local communities within a local government unit. Interestingly, the CHWs can serve as a medium for efficient information transmission and dissemination for the promotion of health. They are the ones directly working on the grassroots level for community profiling, thus, they deal with the smallest unit of our society which is the family. This is an indication that CHWs are indispensable in the delivery and promotion of primary health care programs. Therefore, it is essential for them to achieve health literacy.

Low health literacy and poorer health outcomes has been associated with physical therapy patients (Hahn, et al., 2018), ss well as older adults with chronic diseases (Bostock & Steptoe, 2018; Johnston, 2017). It has also been recognized that low health literacy among Filipinos has been dependent on the epidemic of non-communicable diseases or lifestyle diseases in the community (Leachon, 2014). The necessity for comprehensive training programs and seminars has been identified as a pivotal factor in enhancing the proficiency of CHWs in carrying out their duties and functions. These initiatives serve to equip CHWs with up-to-date knowledge and refine their skills, thereby fostering competence, efficiency, and effectiveness in their roles. By providing CHWs with opportunities for continuous learning and skill development, these programs contribute significantly to their ability to adapt to evolving healthcare needs and deliver high-quality services within their communities (Taburnal, 2020). Therefore, ways to enhance health literacy of CHWs on physical therapy must be developed in order for them to become channels of needed physical therapy information and services in the community, specially to the senior citizens with physical disability.

Given such context, the research aimed to determine the extent of health literacy among senior citizens with physical disability and CHWs as to prose, document, and numeracy. The effect of existing health policies, available programs, facilities, and equipment in the barangay related to physical therapy to the health literacy of the two sampled groups.

This study also serves as a response to the National Unified Health Research Agenda (NUHRA), specifically on health literacy, promotion, communication, and education (NUHRA 2023-2028, p.19). One of the research priorities of the Ilocos Region is to have a rigorous focus on the health of the vulnerable population, which includes senior citizen with physical disability, of which their literacy is an important issue in for the health care sector to consider. It also includes seeking evidence for the improvement of health information systems and health service delivery. Consequently, this study aims to provide information for better health outcomes for the disabled senior citizens through interactive and comprehensive interaction with primary health care providers, specifically, the CHWs.

Methods

Research Design

A descriptive design was employed in the study. The study described the extent of health literacy on physical therapy among the CHWs and senior citizens with physical disability. Particularly, it aimed to describe the extent of health literacy among the respondents identified, within the aspects of physical therapy in terms of prose literacy, document literacy, and numeracy.

Population, Sampling, and Locale

The researchers chose the following rural barangays for the study because of their accessibility and adequate number of potential respondents (Table 1).

Table 1. Locale of the Study

Barangay	Population
Cabuusan, Currimao, Ilocos Norte	400
Ganagan, Bacarra, Ilocos Norte	699
Ganagan, Bacarra, Ilocos Norte	1031

The eighteen (18) CHWs (total enumeration) and 29 senior citizens with physical disability (purposively sampled) were selected based on the selection criteria of the study (Table 2 and Table 3).

Table 2. Selection Criteria of CHW Participants

Inclusion Criteria	Exclusion Criteria
1. A resident in the local community for at least 3 years. 2. Must be able to understand and speak English, Ilocano, or Filipino. 3. Must be formally appointed as CHW of the barangay. 4. Must have attended relevant trainings and seminars as a CHW.	1. Currently has a job beside being a CHW.

Table 3. Selection Criteria of Senior Citizen Participants

Inclusion Criteria	Exclusion Criteria
1. Must be medically diagnosed 2. Must be a resident in the local community 3. Must be able to understand and speak English, Ilocano, or Filipino 4. Can read simple texts. 5. Disability is caused by at least one or a combination of the following: arthritis, osteoporosis, joint replacement, CVA, Parkinson's Disease, neuropathy, and other musculoskeletal and neurologic disorders that can be attended by a physical therapist	1. Cannot verbally communicate 2. With cognitive impairment 3. The physical impairment/s cannot be attended by a physical therapist

Ethical Consideration

An ethics approval for the study was sought from the MMSU Research Ethics Review Board. Upon receipt of ethics approval, letters requesting for the conduct of the study were forwarded to the heads of the college, department, and the local community chairperson of Cabuusan, Currimao; Sangil and Ganagan, Bacarra, Ilocos Norte. Upon approval, the researchers themselves met the respondents to personally explain the contents of the informed consent documents indicating the purpose, significance and methodology of the study in their respective homes. Moreover, the researchers discussed the technical details of the study before their informed consent was secured. They were informed about negligible risks and benefits from participating.

Though there are negligible risks, they were mitigated in ways that the respondents were not forced to participate and have all the rights to withdraw at any time without penalty. Senior citizens with physical disability were interviewed at their houses and their caregivers were given freedom to witness the interview. In case of health emergency during the data gathering, the researchers had a close contact with the nearest health center.

Moreover, the researchers had also undergone a basic course regarding basic life support. To avoid the hazards of long travel, the researchers personally went to the senior citizens' respective houses during the scheduled interview.

If a respondent was unwilling to disclose their personal information, the researchers respected his/her privacy. All information from the respondents were kept with utmost confidentiality and were treated for academic purposes only. Data gathered were kept in a locked cabinet and was shredded and discarded after 2 years to protect the identity of the respondents.

Research Instrument

Permission from the respective authors of the following research instruments was sought for their modification and utilization for the conduct of the study. The authors expressed that the instruments will remain valid and reliable as long as it will not be translated to any other language.

Also, a structured interview guide was used to determine the factors that could contribute to the extent of respondents' health literacy.

Modified Short Assessment of Health Literacy (SAHL). This was used to assess the ability to read and understand common medical terms. It was based on the original SAHL-E instrument that could help health professionals estimate the adult's health literacy level as to prose. This was modified in order to give focus on the health literacy of the respondents pertaining to the practice of physical therapy. The terms were taken from the Johns Hopkins Glossary of Terms for Physical Medicine and Rehabilitation (2014). Persons being examined were presented with 18 terms. For each term, a key word with a related meaning and a distractor word unrelated in meaning were presented to test their knowledge on the term. This tested the respondents' comprehension as well pronunciation of health-related terms. Administration of the test takes only 2-3 minutes and requires minimal training (Lee et al., 2010).

Table 4. Scale for prose literacy in terms of term comprehension (Modified SAHL)

Score	Interpretation
0-14	Low health literacy
15-18	High health literacy

Modified Rapid Estimate of Adult Literacy. It is a screening instrument based on the original Rapid Estimate of Adult Literacy in Medicine (REALM). This was modified in order to give focus on the health literacy of the respondents pertaining to the practice of physical therapy. The terms were taken from the Johns Hopkins Glossary of Terms for Physical Medicine and Rehabilitation (2014). It is designed to assist medical professionals in estimating a patient' s literacy level so that the appropriate level of patient education materials or oral instructions may be used. The test takes 2 to 3 minutes to administer and score.

Table 5. Scale for prose literacy in terms of term recognition (Modified REALM)

Score	Interpretation
0-18	Third grade and below: Patient won't be able to read most low literacy materials. She will need repeated oral instructions or written materials composed of primarily of illustrations.
19-44	Fourth to sixth grade: Patient will need low literacy materials and may not be able to read prescription labels.
45-60	Seventh to eighth grade: Patient will have trouble reading most patient education materials. Use low literacy materials.
61-66	High school: Patient will be able to read most patient education materials.

Newest Vital Sign (NVS). It was adapted and used to assess the health literacy of CHWs and senior citizens with physical disability as to numeracy and document skills. The NVS is a

nutrition label that is accompanied by six questions and requires 3 minutes for administration. Validity for English is 0.88 plotted under the receiver-operating characteristics curves. It is easy to administer and is reliable (Cronbach α >0.76 in English) and correlates with the Test of Functional Health Literacy in adults which is the gold standard for measuring health literacy. Patients with more than four correct responses are unlikely to have low literacy, whereas fewer than four correct answers indicate the possibility of limited literacy (Weiss, et al., 2005).

Newest Vital Signs was used by Hassan and Heptula (2010) to assess health literacy in their study of patients with diabetes insipidus; as well as Escobedo and Weismuller (2013) to assess the health literacy among kidney transplant patients and patients with renal failure. The NVS has been used to assess health literacy in populations ranging from parents of young children to older adults, among racial/ethnic minorities, and applied to a wide variety of health conditions (Powers et al., 2010).

Prior to implementation, the instrument was pilot tested to four (4) CHWs and four (4) senior citizens with physical disability. The pilot testing revealed that the questionnaire needs to be further adjusted in terms of comprehensibility, especially to the senior citizens. However, it is interesting to note that elders who grew during the American Occupation and World War II has minimal problems understanding the questionnaire.

Table 6. Scale for numeracy and document literacy (Newest Vital Sign)

Score	Interpretation
0-4	Low health literacy
5-6	High health literacy

Data Gathering Procedure

Approval from the department chair, college dean, and ethics committee was sought. After approval, a request letter was forwarded to the chairperson of Suyo, Laoag City for the pilot testing of the Modified SAHL and Modified REALM instruments.

A request letter was then sent to the chairperson of Cabuusan (Currimao, Ilocos Norte); Sangil and Ganagan (Bacarra, Ilocos Norte) to ask permission for the conduct of the study. Upon approval of the request, the researchers personally approached the CHWs and requested for the list of senior citizens with physical disability. Upon receiving the list, the researchers personally secured the informed consent of the CHWs and senior citizens with physical disability. The researchers met the senior citizens at their respective houses and the CHWs in their barangay hall to gather their informed consent as well as for the conduct of the structured interview using the research instruments that lasted for 15-30 minutes.

For the final assessment of the health literacy of the CHWs and senior citizens with physical disability, the modified Short Assessment of Health Literacy tool was used through face-to- face interview. Administration of these instruments was facilitated by using laminated 4”-by-5” flash cards, with each card containing a medical term related to physical therapy printed in boldface on the top and the two association words at the bottom. But, if the CHWs and senior citizens with physical disability did not know the answer, a third choice was given saying “I don’t know”.

Next, the researches gave the respondents the laminated copy of the modified REALM word list. An examiner record form was used by the researchers to record the scores of the respondents. If the respondent took more than 5 seconds on a word, he/she was encouraged to move along. Any word that is not attempted or mispronounced was counted as an error.

For assessing the document literacy and numeracy aspects of health literacy, the Newest Vital Sign tool was used through a face-to-face interview. The information was recorded through response and unstructured notes. The researchers asked supplementary questions to determine the factors that could affect the health literacy of the respondents with the use of an interview guide. The answers were recorded through mobile a phone with the respondents’ permission.

Statistical Analysis

Frequency, percentage, and mean were used to describe the respondents’ socio-demographic characteristics. Means were used to describe the respondents’ health literacy.

Results and Discussion

Sociodemographic Characteristics (CHWs)

Age. Eleven out of the 18 respondents are within the age bracket 40-69. According to Honda et al. (2012), community health workers over 40 years of age are likely to display good knowledge and performance in their job. This is in contrast to the result of the study done by Urassa et al. in 2015, wherein they found out that among 238 community health workers, there is no significant relationship between their knowledge retention, and service provision across different age groups.

Sex. There are 17 females and one male respondent. This result implies that the community health system is a female-dominated workplace. With regard to CHWs, George et al. (2018) stated that females can be deployed to services closely intertwined with gendered beliefs such as looking after children, may not get recognized as skilled workers, can lack household support, and also may be affected by personal security concerns. On the other hand, males usually have household support, receive recognition for their work, and are more respected.

Length of service. An equal number of respondents (5 or 27.28% each) have been serving as CHWs within 5 years and more than 20 years. In connection, it was shown in a study done by Coleman in 2015 that more experienced health care providers displayed a higher level of competency and understanding in relation to the

significance of health literacy in their practice. It was also concluded in the same study that apart from experience in years, educational skills and strategies of health care providers can also greatly affect their health literacy.

Educational attainment. A greater number of respondents (33%) are high school graduates. Only 3 of them are college graduates. Persons with higher educational levels tend to have more independence and autonomy, which contributes to lower demand for care and reduced overload for medical care providers (Gomez and Negro, 2016). According to Pinquart and Sörensen (2007), higher educational attainment and the absence of major health problems in caregivers are associated with better caregiver physical health. With better education, the ability to deal with situations is improved.

Sociodemographic Characteristics (Senior Citizens)

Age. The age groupings are based from the Provisional Guidelines on International Standard Age Classification by the United Nations which relies on demographic, social and economic data. Fourteen out of 29 respondents are aged 65 to 74 which represents 48.28% of the sample size, while (6.90%) are within the age bracket 85-94. It is also important to note that, (44.83%) are aged 75 to 84. Chesser et al. (2015) stated that health literacy is associated with cognitive function across multiple domains among the elderly. Unfortunately, older adults may face additional memory and cognitive challenges that can further limit their health literacy. Moreover, Geboers et al. (2018) stated that older adults with poorer cognitive functioning and stronger cognitive decline are more likely to have low health literacy, which in turn can affect their abilities to promote health and self-manage disease.

Sex. Majority of the respondents, 65.62%, are females while only 10 (34.48%) are males. Such results find support in the study of Von Wagner et al. (2007) who have reported an association between old aged participants' gender and literacy. However, the study of Patel et al. (2012) contradicts such results showing that gender of participants did not play a role in their participants' health literacy.

Type of impairment. Of the 29 respondents, 21 of them have a disabling musculoskeletal impairment due to arthritic diseases. According to Texas A&M University in 2016, two of the top chronic illnesses that contribute largely to disability in people aged over 65 years are foot problems and arthritis. The same research includes chronic respiratory and cardiovascular disease such as chronic obstructive pulmonary disease (COPD), chronic heart failure, coronary heart disease, cerebrovascular disease, falls and hip fracture as other causative factors leading to disability in older adults. On the other hand, a study conducted in 2016 by a university in Texas emphasized that about 92% of seniors have at least one chronic disease and 77% have at least two. Heart disease, stroke, cancer, and diabetes are among the most common disabling chronic health conditions among the aged population.

Prose Literacy

Overall, senior citizens with physical disability exhibit low health literacy in prose literacy, with some older individuals demonstrating higher health literacy potentially influenced by cultural and educational factors. The introduction of English as a medium of instruction during the American Era may have impacted the fluency of older adults in reading and processing English texts (Musa and Ziatdinov, 2012). Additionally, normal aging leads to a decline in visual sensitivity, which can affect reading comprehension (Paterson et al., 2013).

On the other hand, CHWs, generally display low prose literacy in physical therapy. This may also stem from unfamiliar terms and concepts in the instruments used. Since CHWs often speak the same language as the community they serve, unfamiliar terms in physical therapy practice materials may hinder their reading ability.

In connection to this, the quality and effectiveness of an individual are notably influenced by their level of education. Santos (2011) as referenced by Taburnal (2020) underscores this point, indicating that the competence of a CHW is partly contingent upon their grasp of the functions and responsibilities inherent in healthcare service provision. Fulfilling these core functions necessitates CHWs to possess sufficient knowledge and skills to execute their duties with efficacy and efficiency. Kok (2012) provides additional support for this notion, asserting that the careful selection of CHWs based on certain traits, including higher education levels, experience with health conditions, fewer household responsibilities, and lower socioeconomic status, correlates with enhanced competencies, favorable attitudes, and reduced dropout rates among CHWs.

Table 7. Prose literacy scores of the participants

Variables	Senior Citizens			CHWs		
	x̄	SD	Description	x̄	SD	Description
Modified SAHL	8.38	2.88	Low health literacy	11.17	3.08	Low health literacy
Modified REALM	33.66	27.56	Fourth to sixth grade	56.94	8.06	Seventh to eight grade

Document Literacy and Numeracy

Overall, senior citizens with physical disability exhibit low health literacy in prose literacy, with some older individuals demonstrating higher health literacy potentially influenced by cultural and educational factors. The introduction of English as a medium of instruction during the American Era may have impacted the fluency of older adults in reading and processing English texts (Musa and Ziatdinov, 2012). Additionally, normal aging leads to a decline in visual sensitivity, which can affect reading comprehension (Paterson et al., 2013).

Table 8. Document literacy and numeracy scores of the participants

Variable	x̄	SD	Description
NVS	2.67	1.57	Low health literacy

Factors Affecting Health Literacy on Physical Therapy

Resources. Based on the qualitative interview, all CHWs gain health information from books, magazines, brochures, and seminars given by the government, while 2 of them use social media to gain additional information. However, the materials given by the government are about maternal and infant care, infectious diseases, and importance of vaccinations. Thus, they are not well informed regarding physical therapy and disability as reflected in the results of the study.

The provision of health education and community teaching is a significant responsibility for CHWs. Therefore, they must possess adequate knowledge and skills to effectively convey accurate information to the community. As highlighted by Naga's Barangay Health Workers Ordinance (2012), CHWs play a crucial role in delivering essential primary health care services within the community.

These services encompass various topics such as maternal and child care, including breastfeeding, immunization, and family planning, as well as oral rehydration for diarrhea, promoting good nutrition, raising awareness about prevalent health issues, methods of prevention and control, and ensuring the proper provision and use of essential drugs and herbal medicines.

Based on the qualitative interview, most of the senior citizens with physical disability watch and listen to TV and radio programs related to health, in which treatment and prevention of various diseases are being discussed but not within the specific context of dealing with disability and other possible interventions, such as physical therapy. Also, 15 respondents stated that they also obtain important health information from CHWs as they conduct house to house visitations at least twice a month. According to Zahn et al. (2012), the CHWs are the frontline public health care providers who are trusted and have understanding of the communities they serve through shared ethnicity, culture, language and life experiences especially to the older adults. This enables them to break down social or cultural barriers among communities and health care, behavioral health, and social service systems. Thus, they have potential roles as a source of health information in the community, specifically to the older adults. Likewise, in 2015, Lorenzo proposed that CHWs play a great role in developing strategies within general community development for the prevention of impairments, rehabilitation, equalization of opportunities, poverty reduction, and inclusion of adults with disabilities into the mainstream society.

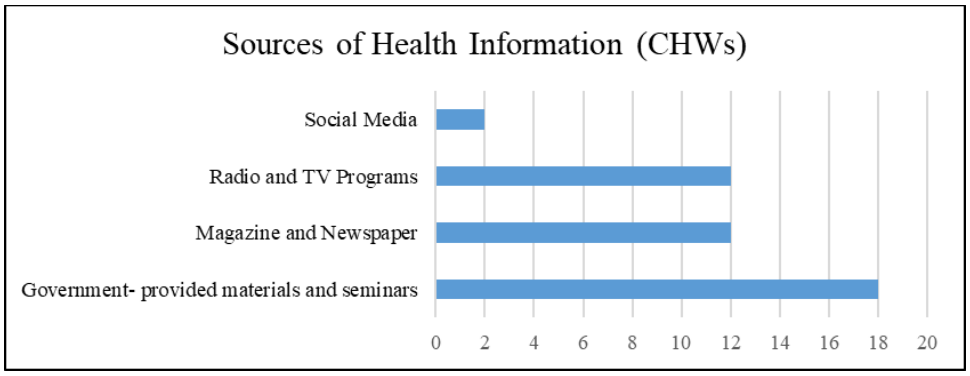

Figure 1. Sources of health information of the CHWs.

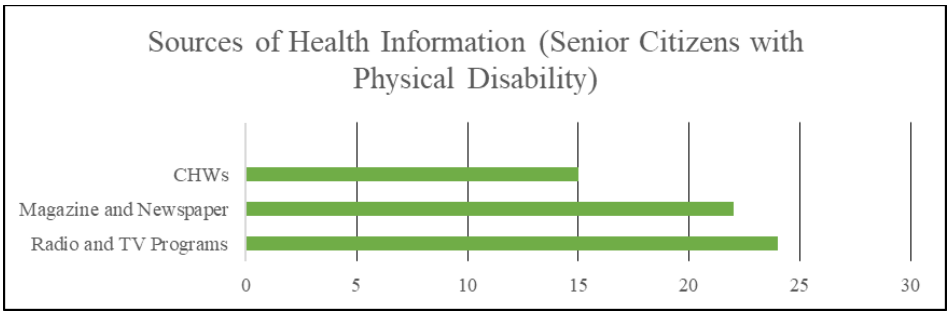

Figure 2. Sources of health information of the senior citizens with physical disability.

Health policies and perceptions about physical therapy. All CHWs who participated in the study stated that current barangay ordinances and local health programs primarily focus on transmittable diseases, child and maternal health, rabies, and clean and green projects. They also said that they have not had an interaction with physical therapists regarding potential barangay health project about physical therapy and disability.

On the other hand, 17 out of 29 senior citizens stated that they are not aware of any ordinances or programs relevant to health in their barangay. Also, 23 out of the 29 respondents said that they are not really sure about what physical therapy is and that they think that physical therapists primarily perform massage techniques to relieve body aches.

The WHO (2011) has advocated for increased research efforts in developing countries to gain a deeper understanding of the advantages of health programs for individuals with disabilities, including rehabilitation. Advancements in healthcare services have led to the decentralization of responsibility and financial management to the local government level.

Recently, the Filipino government has expressed its desire to prioritize the incorporation of rehabilitation services into secondary and tertiary health facilities, as well as to integrate rehabilitation services into primary care packages (WHO, 2017).

It is understandable that countries like the Philippines may prioritize initiatives such as the development of immunization programs and midwifery services in rural communities to address issues like child and maternal mortality. However, recognizing the benefits of rehabilitation could enrich discussions surrounding this topic and broaden perspectives.

Conclusion

Based on the findings of the study, it is concluded that the CHWs are able to read, understand, and apply acquired health information. Their long years of experience could also mean that they are trusted by the people and can be effective partners in the implementation of health programs regarding physical therapy in the community. Also, their low health literacy on physical therapy might be due to health programs and seminars that are focused less on fitness, wellness, and disability and none or limited interaction with physical therapists. As frontliners in the provision of health services in the barangay, they must then be educated regarding physical therapy to avoid and control the prevalence of disability in the community.

Senior citizens with physical disability have impairments that can be addressed by physical therapy interventions. Those with physical disability have limited fluency of the English language and have difficulty understanding and analyzing numbers. Their low health literacy could also imply that they have no or very little interaction with a physical therapist and thus, they must be educated regarding the practice of physical therapy and what it can do to improve their health condition. Thus, there is a need to develop health literacy interventions and materials to increase awareness on the practice of physical therapy in the community.

Recommendations

In the light of the conclusions, it is recommended that CHWs should engage more in reading and understanding health-related information materials, such as accessing into reliable websites in the internet, to improve the communication and dissemination of relevant health information, especially regarding care of the elderly and disability as much as their time permits. The caregivers of senior citizens with physical disability should have close interaction with CHWs and health care providers, such as having frequent consultations with their patient's physician and to participate in health-related activities in the barangay as much as possible, to improve the medical condition and to limit social restrictions experienced by their patients.

As for physical therapists and allied educational institutions, they should commit into developing IEC (information, education, communication) materials regarding physical therapy as a part of the community-based rehabilitation (CBR) program as soon as possible. They should also emphasize the importance of breaking barriers for the inclusion of the physically challenged and vulnerable members of the community for a unified health and economic progress.

Health care providers and health institutions, should be more active in the provision of health services in the community setting for a generalized better health outcome dissemination of needed health information, especially in inaccessible areas. They could organize medical missions and screenings as much as the resources permit.

To future researchers, they should also study the impact of health literacy of persons with disabilities belonging to other age groups and who have specific health conditions. Further modification of the instruments used are also encouraged, such as the use of common terms and possible translation into the Iluko language. They should use larger sample size to have a more comprehensive and generalizable result.

The academicians should emphasize among the students the impact of health literacy in the prevention and control of acquiring disability, especially in chronic health condition which could be done by devoting ample time for the discussions of the said topic during classroom lectures, with eventual inclusion in the syllabi of related subjects.

For the community members, they should understand more about nutritional facts and ingredients of consumable products. They are encouraged to take advantage of the internet in accessing wide array of health topics and health tips as much as possible.

Lastly, policy-makers should formulate public health policies in improving health literacy of the community health team, especially the CHWs. Moreover, for them to continue developing ways and policies for the promotion of health and health equity among the vulnerable population like the persons with disabilities and senior citizens as soon as possible.

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Conflict of interest statement

The authors declare no competing interests.

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Appendix A

Modified Short Assessment of Health Literacy

MODIFIED SHORT ASSESSMENT OF HEALTH LITERACY

Stem		Key or Distracter	
1. Physical Therapy	__rehabilitation	__massage	__don't know
2. Spasticity	__contraction	__plasticity	__don't know
3. Cerebrovascular Accident	__stroke	__heart attack	__don't know
4. Stretching	__exercise	__game	__don't know
5. Disability	__handicap	__health	__don't know
6. Inflammation	__swelling	__information	__don't know
7. Atrophy	__muscle wasting	__muscle relaxation	__don't know
8. Walker	__cane	__slippers	__don't know
9. Gout	__arthritis	__ cancer	__don't know
10. Wellness	__health	__disease	__don't know
11. Fracture	__bone	__tendon	__don't know
12. Sprain	__ ligament	__strain	__don't know
13. Dislocation	__ discontinuity	__ junction	__don't know
14. Tendon	__ tension	__ lesion	__don't know
15. Cartilage	__ connective tissue	__facial tissue	__don't know
16. Muscle	__ movement	__ cessation	__don't know
17. Acetaminophen	__ paracetamol	__ mefenamic acid	__don't know
18. Arthritis	__ joint	__ muscle	__don't know

**based from Johns Hopkins Glossary of Terms for Physical Medicine and Rehabilitation (2014)*

Appendix B

Modified Rapid Estimate of Adult Literacy in Medicine

MODIFIED RAPID ESTIMATE OF ADULT LITERACY IN MEDICINE

List 1		List 2		List 3	
Rehabilitation	Function	Fatigue	Hypoxia	Weight	Treadmill
Resistance	Ultrasound	Pelvic	Dumbbell	Splint	Inflammatory
Strength	Flexibility	Bandage	Arthritis	Oxygen	Restriction
Cryotherapy	Traction	Infection	Nutrition	Hemorrhage	Palpation
Stroke	Spasm	Exercise	Laser	Infrared	Orthosis
Reflex	Rheumatic	Babinski	Dystonia	Analgesia	Manipulation
Contraction	Stimulation	Neuromuscular	Amputee	Edema	Hypertension
Nerves	Spine	Hamstring	Quadriceps	Joint	Glucose
Dyspnea	Asthma	Strain	Sprain	Prosthesis	Obesity
Trauma	Paralysis	Apnea	Nausea	Protein	Osteoporosis
Disease	Lactic Acid	Autoimmune	Tremor	Neuropathy	Flaccid

**based from Johns Hopkins Glossary of Terms for Physical Medicine and Rehabilitation (2014)*

Appendix C

Newest Vital Sign

Nutrition Facts

Serving Size	½ cup
Servings per container	4
Amount per serving	
Calories 250	Fat Cal 120
	%DV
Total Fat 13g	20%
Sat Fat 9g	40%
Cholesterol 28mg	12%
Sodium 55mg	2%
Total Carbohydrate 30g	12%
Dietary Fiber 2g	
Sugars 23g	
Protein 4g	8%

*Percentage Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Ingredients: Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.

READ TO SUBJECT: This information is on the back of a container of a pint of ice cream.

1. If you eat the entire container, how many calories will you eat?

Answer: 1,000 is the only correct answer

2. If you are allowed to eat 60 grams of carbohydrates as a snack, how much ice cream could you have?

Answer: Any of the following is correct: 1 cup (or any amount up to 1 cup), half the container. Note: If patient answers "two servings," ask "How much ice cream would that be if you were to measure it into a bowl?"

3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 g of saturated fat each day, which includes one serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day?

Answer: 33 is the only correct answer

4. If you usually eat 2,500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving?

Answer: 10% is the only correct answer

READ TO SUBJECT: Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves, and bee stings.

5. Is it safe for you to eat this ice cream?

Answer: No

6. (Ask only if the patient responds "no" to question 5): Why not?

Answer: Because it has peanut oil.