

# **The Experience of Adult Patients with Stroke in Adherence to a Home Physical Therapy Program**

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## **ABSTRACT**

Considering that stroke is one of the leading causes of disability and mortality, the researchers looked into the experiences of adult patients with stroke in their exercise adherence to a home physical therapy program. The researchers employed a qualitative phenomenological study that utilized a semi-structured, cross-sectional, one-on-one interview with patients. The data were collected from 10 participants through interview with transcription notes, audio, and visual recordings. Data analysis was done by coding and thematic categorizing.

There were five themes that emerged from the data gathered: First, insights are perceptions regarding the respondents' activity limitations through the results of their physical therapy evaluations. Second, motivation refers to their directed behaviors informed through home exercise instructional program in order to modify their mindset and environment. Third, response refers to supervised engagement in physical activity prescribed in their home exercise instructional program. Fourth, the barriers encountered in their exercise adherence entail miscommunication in supervised home physical therapy sessions and insufficient support of surrogate to carry on home exercise programs. Finally, the enablers that sustain their exercise adherence involve favorable socio-economic status, optimism showed to them by their surrogates, as well as appropriate interaction of the physical therapy interns in establishing rapport, home physical therapy instructional program, and scheduled home sessions. This study is strongly supported by literature as respondents implore total quality management as well as future researches that would explore attitude and grittiness of persons with disabilities and their surrogates across the lifespan in community-based exercise programs.

**KEYWORDS:** *Patients with stroke, Adherence, Physical Therapy, Home Exercise Program, Experience.*

## INTRODUCTION

Nowadays, persons with disabilities (PWDs) especially in the developing countries are being paid attention to their concerns as Groce & Bakshi (2009) advocated their inclusion in order to enhance their literacy. Concurrent to the advocacy, Harrison, Mackert, & Watkins, (2010) identified issues to be addressed such as the inability to adapt information amenable to their functional status, and barriers arising from rapport established by the healthcare providers. In order to improve the impact assessment of the said program, studies of Montgomery, et al (2017) regarding clients with HIV who experienced the community-based exercise program and Moore, et al (2014) pertaining to the benefits of clients with stroke who underwent the said exercise program serve as the theoretical framework of the study.

The purpose of this qualitative phenomenological study is to describe the experiences of adult patients with stroke to their basic home rehabilitation program. Its significance would impact the following in order to (1) rethink the structure and content of the basic home rehabilitation program that enables adherence for the client and their families; (2) make doable for the client and their surrogates the virtue of adhering to basic home rehabilitation program; and (3) make doable for the program stakeholders in planning, implementing, and evaluating the health education and promotion and the impact of the EAC-SPORT CBR Program in terms of adherence of the client and surrogate to the said home program as one of the components.

Cerebrovascular diseases ranked as the second leading cause of death (11.8% of all deaths) worldwide, and the third most common cause of disability (4.5% of disability-adjusted life years [DALY]) after ischemic heart disease (Feigin, Norrving, and Mensah, 2017). Whereas in the United States, those patients with stroke with adequate and marginal health literacies have better outcomes than with inadequate health literacies (Sanders, et al, 2014). In the Philippines, studies of Navarro, et al. (2014) and Jamora, et al. (2017) states that stroke is one of the significant factors and is second to the leading cause of mortality after cardiovascular diseases.

In an interview with Dr. Antonio Leachon, former president of the Philippine College of Physicians regarding the health literacy status in the Philippines said (Mateo, 2014; Philippine Council for Health Research and Development, n.d.):

“...we have failed in health literacy. Why? We have a lot of medical and health knowledge, but many Filipinos fail to comply with what is needed and must be done about their health.”

Given this health promotion scenario, Nutbeam (2000) instigated to pay attention to a person-centered approach in interaction, a community-oriented instruction to apprentices and a people-friendly environment in order to mitigate noncompliance, in particular with home physical therapy programs.

Health literacy and adherence to exercise programs has been found out to have a positive association (Tang, et al 2017; Sum Lam and Yee-Man Leung, 2016; Gibney and Doyle, 2017). Thus, the concept of adherence emphasizes the agreement between the client and the health professional in carrying out the home health care plan (World Health Organization, 2003). For the EACM-SPORT CBR Program, in partnership with the Municipality of Victoria, Province of Laguna in Academic Years 2015-2016, 2016-2017, and 2017-2018 had both parties currently addressing the impact of disability for both health and social issues among our PWDs through providing basic home rehabilitation program to the PWDs in their homes, as the one of the primary health service component of the said program. What the researchers are unaware of is that how are

they experiencing adherence to basic home rehabilitation program as agreed between by their assigned Physical Therapy Intern and the clients and their surrogates that they collaborated with.

Personal factors related to adherence to basic home rehabilitation program refers to variables that affect adherence of the clients to the said program, such as age, beliefs, socioeconomic status, health literacy, and psychological outlook (Levin-Zamir, et. al, 2016; Picorelli, et. al, 2014; Chan & Can, 2010; Clark, 1996). These factors are contextually attributed as internal motivation that the clients experience or manifest as they undergo a basic home rehabilitation program. For instance, age is related to adherence such that as long as the client's physical abilities can compensate for the functional limitation to perform a task, the variable is associated with high adherence (Picorelli, et al, 2014; Clark, 1996). Second, beliefs are associated with adherence and non-adherence such that outcome expectancies and adherence expectancies are health-seeking behaviors for the client to improve from their functional limitations but holds true for the reason of non-compliance (Abraham & Sheeran, 2015; Maneze, et al, 2015; Picorelli, et al, 2014; Chesanow, 2014). Third, socio-economic status of the client plays a role in adherence such that high adherence is associated with income after years of education and self-efficacy (Levin-Zamir, et al, 2016; Picorelli, et al, 2014; Osborn, et al, 2011; Clark, 1996). Fourth, health literacy is associated with the clients' adherence such that upon self-assessment of his/her level of comprehension enables him/her to put value to the said home exercise program as agreed upon by the health professional assigned to the client (Levin-Zamir, et al, 2016; Sluijs & van der Zee, 1993). Fifth, the psychological outlook among clients facilitate adherence such that decreased depressive symptoms and good cognitive ability is inherent to adherence (Picorelli, et al, 2014).

Program factors related to adherence to the basic home rehabilitation program refers to human resource, health education materials, and routines that enable adherence of the client to cope up with his/her functional limitations. These are considered contextually as external motivation that the clients are undertaking in order to sustain adherence to the said home program. In terms of human resource, studies concluded that home programmes can become as effective as expert-provided therapy, provided that the assesment and competency of the health professional concerning his/her clients' health literacy level for dispensing appropriate basic home rehabilitation instructional strategies is taken into consideration (Chesanow, 2014; Alexander, et al., 2012; Novak, 2011; Levasseur & Carrier, 2010; Chan & Can, 2010; Bassett, 2003; Bass III, et al, 2002). In addition, health education materials appropriate to the clients' level of comprehension is a fundamental to home exercise program adherence (Doyle, et al, 2012; Chan & Can, 2010); Furthermore, physical therapy session routines play an important role to home rehabilitation program empowerment of clients such that frequency of attendance and those with physical therapy intervention requiring supervision is significant for clientele adherence (Picorelli, et al, 2014; Bollen, et al, 2014; Alexander, et al., 2012; Novak, 2011).

**The Conceptual Framework.** Cilesiz (2010) explained the phenomenological concept of experience. In this study, the experience of adult patients with stroke in adherence to a home physical therapy program comprises two interrelated dimensions: (1) the adult patients with stroke and (2) the home physical therapy program. These two dimensions make up the consciousness of the adults such that its interrelationship, the rehabilitation process, cannot exist without the other and therefore it is an *intentional experience*. The adult patients with stroke, known as *noesis*, is inherent with personal-related factors pertaining to exercise adherence. The personal-related factors are accounted as *textures* of an exercise adherence experience. On the other hand, the home physical therapy program, known as *noema*, is inherent with program-related factors that is associated with exercise adherence. These are accounted as *structures* of the said experience. Thereby, the

structures in the detailed description of the study participants constitute the *essence* of the said exercise adherence experience.

## MATERIALS AND METHODS

This qualitative phenomenological study utilizes a semi-structured one-on-one interview among adult patients with stroke in their homes, chosen by a purposive sampling method. Data were collected by MP4 by a smart phone, MP3 by a digital audio recorder, and handwritten notes in order to capture the participants' responses, through an open-ended questionnaire. Prospect respondents are middle-aged and old-aged clients with stroke who are ongoing and are discharged from the home physical therapy program, capable of comprehending their exercise adherence experience.

Prior to data collection, informed consent was provided and are signed by the participants. During data collection, profiles were obtained as to their serial number, codenames, age, and sex as well as the actual conduct of the interview. After data collection, handwritten notes are kept in a locked office desk drawer. Audio and video records are formatted in low profile folder and kept in password-protected personal computer. Data analysis is conducted by transcription of captured data into Microsoft Excel 2013. Coding were assigned during the transcription, revealing categories and themes pertaining to the research objective.

## RESULTS AND DISCUSSION

In this study, we described the experiences of adult patients with stroke regarding their adherence to a home physical therapy program. Our results reveal the profile of the respondents as well as insights on how a client with stroke undergo the said exercise program.

**Profile of the Respondents.** Out of the 10 respondents, 3 were excluded due to responses by their husbands or wives. The median age of the 7 respondents is 62 years. The 3 Males were pseudonymed as “Ray,” “Pilo,” and “Harry,” whereas the 4 females were “Aniline,” “Thess,” “Bon,” and “Agie”.

**Emerging Themes.** The first theme, *insights in adherence to home physical therapy program* make the clients with stroke aware of the rehabilitation process that they will be undertaking. It comprises health behaviors that makes them *conscious about their functional limitations*. Majority of the respondents experience severe mobility impairment (n=5), severe upper extremity (UE) impairment (n=3), moderate mobility impairment (n=2), speech difficulty (n=1) and psychosocial problem (n=1). Among the respondents who experienced the most impact of functional limitations in their daily living are Agie and Thess.

“I find it hard to work at the house and I cannot do a job (*Hirap pa ako magtrabaho sa bahay at di kayang maghanap-buhay*).” – Agie, with severe mobility impairment

“At first, for me it’s hard to walk. Totally, half of my body, I can’t move especially my foot and hand (*Una po, ah, hirap akong lumakad. Totally, kalahati ng katawan ko, hindi ko naigagalaw. Lalong-lalo na po ang aking paa at kamay...*)” – Thess, with severe UE impairment and severe mobility impairment

Another insight involves participating in *physical therapy evaluations*: Majority of the respondents underwent survey (n=5), initial evaluation (n=4), and vital signs (n=1). Among the respondents

who underwent physical therapy evaluations that had provided them insights on their functional limitations is Thess.

“I was interviewed, I was asked what is my age, then when did my sickness started, and there it is. Then, my blood pressure was taken (*In-interview po niya muna kami, ako. In-interview niya ako, tinanong niya ako kung ilang taon na ako, kung kailan nagsimula ang aking sakit, ganun po. Tapos, binipihan niya ako.*” – Thess, underwent survey, initial evaluation, and vital signs.

The second theme ***motivations in adherence to home physical therapy program*** endeavored clients with stroke ***instructional strategies to initiate and maintain the said program***. Majority were taught by means of written home instruction (n=8), demonstration (n=6), verbal instruction (n=2), return demonstration (n=1), and videotape (n=1). Among the respondents who underwent and appreciated the instructional strategies taught is Ray, Thess, and Troy.

“Well, they taught me what to do, then they provided me with what they call...What was that? Is that a board? There, illustration board, they left me illustration boards so that it’s a means that will serve to guide me in my exercise (*Bali, Itinuro saakin yung dapat kong gawin tapos nag iwan sila nung tinatawag na, ano ba tawag dun? Board ano? Ayun, illustration board, nag-iwan sila ng mga illustration board para hakbang para maging guide ko sa pag-e-exercise.*)” – Ray, who is taught by verbal instruction, demonstration, and written home instruction.

“The first recommendation to me is to use a cane....Yes, in this manner (referring to starting position for shoulder flexion and extension in wand exercises), and then, straighten my both hands, and after 7 to 10 times in that manner, and then cane placement. And so, gradually recovering. (*Una pong inirekomenda sa akin, iyung paggamit ng cane....Opo. Iyung igaganyan [referring to starting position for shoulder flexion and extension in wand exercises], tapos, itutuwid ang dalawang kamay, pagkatapos ng 7 to 10 times na ganun, iyon namang posisyon ng paggamit ng cane. Kaya unti-unting nakaka-recover.*)” – Thess, who is taught by verbal instruction and demonstration

“Illustration board. There are pictures on how to do the exercises. Seen are standing, mobility, squatting, and lunges. Those are my routine (Illustration board. *Doon ho ang mga picture kung papaano mag-exercise. Nandoon iyung pagtayo, pagkilos, at iyung pag-squat at saka lunges. Hayun po lagi ang ginagawa ko.*)” – Thess, who was provided with written home instruction

The second category provided them ***perceptions as to their functional limitations from the given home physical therapy program***. Majority responded based from their personal point of view (n=7), environmental changes (n=7), and stated with additional information (n=1). Among the respondents with an additional insight is Aniline.

“When I hear a medical term, I read it right away, I really search for it, I’m fond of reading medical books since I got stroke. Although, nevertheless, since then, not only that I’m fond of reading, but also I really look for it (*Pag ako ay may narining na medical term, binasa ko na talaga, nag se-search talaga ako, mahilig talaga akong magbasa ng mga medical books simula ng ako ay ma-stroke. Although, bagaman, noon pa man, mahilig na ako magbasa, pero mas hinahanap ko talaga.*)” – Aniline, with insight on additional information, personal point of view, and point of view based from environmental changes

The third theme, *responses in adherence to home physical therapy program* provided the clients with stroke the benefits of undertaking the said program in terms of *outlooks in following instructions as supervised*. Majority of the respondents do the instructions as supervised (n=6) but Agie has some modifications (n=1).

“Sometimes, because I need to work for living and traveling back and forth, tired so much in searching for food, I won’t be able to exercise properly except when I pump at the water pump (*Minsan, dahil na naghahanap-buhay at paroo’t parito ako, sobrang pagod sa paghahanap ng pagkain, hindi na nakapag-e-ehersisyo nang maayos kundi gaya na lang ng pagbobomba sa poso*).” – Agie, with modified instructions done as supervised

Another category is the *engagement in physical activity as an outcome to exercise adherence*. Majority of the respondents are engaged in physical activity (n=6), regulated their diet (n=3), more involved in daily activities (n=3), and stopped vices (n=1). Among the respondents, Pilo has made a significant behavioral change from exercise adherence.

“I find difficult to move, but my way of living changed such that I disciplined myself from salty, fatty, and oily foods, and hard drinks (*Hirap kumilos, nabago ang pang-araw-araw na pamumuhay, diet na sa lahat ng bawal gaya ng maalat, mamantika, alak at walang cholesterol*).” – Pilo, who is engaged in physical activity, regulated diet, and stopped vices.

The fourth theme *enablers of adherence in home physical therapy program* contribute to clients with stroke such as *personal related outlooks*. Majority of the respondents highlighted their psychosocial well-being (n=5), socio-economic well being (n=4), and their physical ability (n=4). Thess is among the respondents that have enablers to exercise adherence.

“Then, my husband arrives home, he brought snacks and feed me. After that, I put effort to clean and cook, myself. Then my husband when he arrives home, he doesn’t want me to take a bath alone because I might slip and fall off or whatever might happen, especially when boiling water [to warm my pail]. So he bathe me. Especially when it’s my home session schedule, I’m groomed (*Tapos, mamaya uuwi ang asawa ko, dinadalhan niya ako ng merienda, at pakakainin ako. Pagkatapos, ako naman, naglilinis-linis, nagluluto,....sarili ko. Pinipilit ko sarili ko. Tapos darating asawa ko, ayaw niya akong payagang maligo mag-isa. Kasi, baka ako’y dumulas, o anumang mangyari lalo kapag nag-iinit ng tubig, ako’y kanilang nililiguan muna. Tapos, kapagka lalo na iyung araw na iskedyl ng dating ng aking therapist, ayos na ako*).” – Thess, with socio-economic well being, psychosocial well-being, and physical ability

*Program-related factors* that serve as enablers include behaviors that occur in rapport establishment of PT interns, delivering PT home instruction programs, and the conduct of home PT sessions. In *rapport establishment*, majority of the respondents highlighted behaviors of the PT interns such as manifesting good humor (n=5), thoughtfulness (n=2), kindness (n=2), courtesy (n=1), punctuality (n=1), being approachable (n=1), industriousness (n=1), patience (n=1), and being caring (n=1). Thess and Aniline are among those satisfied with their exercise adherence.

“They are prompt and kind, approachable. When you ask them what is appropriate, they respond. They will advise you what to do and they teach it properly (*Maayos naman, mababait sila, approachable, pag may tinaanong ka kung ano ang tama, sinasagot naman*”).

*nila, sasabihin nila kung ano ang dapat gawin, itinuturo ng maayos).*” – Aniline, satisfied with kind, approachable, thoughtful, PT interns with good humor in establishing rapport

“Well, they accommodated me accordingly. They are kind. When they arrive, because I have a therapist when they arrive, my PT gives courtesy. Then, my PT asks, ‘How are you?’ and then, my blood pressure was taken and asks if I’m okay and ate already. After my blood pressure was taken, our home session starts. Before departure, my PT gives courtesy (*Aba, maganda po ang pag-aasikaso niya sa akin* [interviewer giggles]. *Mababait po sila. Pagdating nila, kasi may therapist ako pag nadating sila, siya nag-be-bless sa akin. Pagkatapos, ‘Nanay kamusta ka?’* (point of view from therapist), *tapos ako ay bibipihan niya, tatanungin niya muna kung okay na ako, kung ako’y kumain na. Pag ako’y okay na’t nabipihan na, saka kami nag-se-session. Bago umalis, nag-be-bless din).*” – Thess, satisfied with courteous, kind, thoughtful, and caring PT interns

Secondly, ***delivering appropriate home PT instructional program*** involves good humor (n=3), courtesy (n=3), kindness (n=1), being compassionate (n=1) and thoughtfulness (n=1). Agie is one of those satisfied when she is accommodated.

“They are kind, they are diligent in my exercise adherence (*Mabait, palagi pong ginagawa ang ehersisyo).*” – Agie, satisfied with kindness, compassion and courtesy of PT interns

Lastly, the ***conduct of PT home sessions*** involves altruism (n=2), kindness (n=2), and being compassionate (n=2) manifested by the PT interns, establish an accommodating environment for the clients in order for exercise adherence to ensue. Bon and Ray are impressed by the PT interns’ altruism, whereas kindness for Aniline and Thess, as well as compassion in the case of Harry and Agie.

“It soothes the body when doing the exercise. Before, my hand is hard to move but now it’s easy. My paralysis still persists, so I have to exercise my tongue (*Nakakaginhawa ng katawan kapag nakakapag-exercise, dating mabigat itong dalhin itong kamay ko, ngayon ay gumaan-gaan. Iyung ngiwi na lang ang hindi naalis, kaya dapat mag-exercise ng dila).*” – Bon

“Well, my good experiences are first, I realized the purpose of the therapy process, second I saw that they manifest their dedication for their patients to recover, and I realized also that the therapists (PT interns) are not receiving offerings because those are for free (*Bali ano, iyung karanasang maganda, una ay nalaman ko kung ano ang layunin ng pagteterapi, pangalawa ay nakita ko iyung kanilang dedikasyon para iyung kanilang pasyente e makarecover, at doon ko din nalaman na sila pala, itong mga nagteterapi ay wala namang natatanggap dahil ito daw po ay libre).*” – Ray

“So many, first they’re kind, not rude, meaning they’re not ill-tempered, but there are some who do, if someone is importunate such as me, actually (*Marami, unang-una, mababait sila, hindi suplada, kumbaga hindi sila mainisin, mayroon kasing mabilis mainis kapag makulit, e ako makulit talaga).*” – Aniline

“My good experience is that when they arrive, I’m glad because they pay respect to me, then they ask me how I’m doing and if I’m okay, and that’s it. After taking my blood pressure, we start our home session. The therapists assigned to me are competent and kind (*Ang karanasan ko pong magaganda, kapag sila ay dumarating, natutuwa ako. Kasi*

*nagbibigay galang sa akin, tapos tinatanong nila ako kung ano'ng nararamdaman ko, kung ako'y okey, hayun kako ang tinatanong nila sa akin. Kaya pagkatapos na ako'y okey na, nabipihan na, saka kami nagse-sesyon. Pero magagaling, mababait ang mga napapa-iskedyul sa akin na therapist.)” – Thess*

“Well, I’m glad because I’m being rehabilitated, it’s not being arrogant. I’m financially scarce but how much more, youths who are dedicated to help me recover, given that they’re studying (*Aba, masaya ako sapagkat ako'y ginagamot, hindi ako pa-importante. Wala na ngang pera eh, ginagamot nang walang bayad eh ano pa, mga kabataang nagsasakripisyo para ako'y mapagaling, nag-aaral pa iyon.*)” – Harry

“They’re kind. They always perform exercises [with me] (*Mabait. Palaging ginagawa ang ehersisyo.*)” - Agie

The fifth theme ***barriers in adherence to home physical therapy program*** results in slow recovery. One of the main factors involve ***non-adherence of the surrogate during supervised sessions*** (n=2) where Bon and Pilo encountered most of the time. On the other hand, Aniline experienced ***miscommunication*** (n=1).

“No need for the surrogate to help with the exercise (*Hindi kailangan ng tulong ng kasambahay sa exercise.*)” – Bon

“The surrogates are not supporting because the wife needs to go to work and the children need to study, so I am ought to work for myself, and they’ll be assisting if there are tasks that I can’t do alone (*Ang mga kasambahay ay hindi nakaagapay dahil ang asawa'y kailangang maghanap-buhay at ang mga anak ay kailangang mag-aral kaya ako na lang mag-isa ang nagsisikap sa sarili ko, umaalalay lang sila sa mga gawain na hindi ko kayang mag-isa.*)” - Pilo

“There’s absolutely none, except for the one that is her home schedule. She’ll be informing me that they’ll be having a barangay-level activity or will be going to another barangay, and then she’ll be texting that I’ll be canceled from the home session due to three counts just because she wasn’t arriving for my home session due to those activities. That’s why I went to your office to clarify these matters (*Wala naman, maliban dun sa isa na lagi sya pupunta dito, sasabihin niya may activity sa ano baranggay o may pupuntahang sa ibang baranggay ganon, tapos te-text siya na , ayon laging ganon, tapos nagtaka ako, biglang may nag-text ang ginamit na pangalan, kay Ma’am, parang pinalabas nya na si Ma’am, pero hindi si Ma’am, number niya, nakalagay doon na since hindi ako nagpaterapi ng tatlo yata, parang ika-cancel na yung pangalan ko, nagtaka ako, bakit ganon ang text, eh siya yung hindi nadating, syempre nagulat ako, kasi ang way ng pagsasalita nya ay sya si Ma’am, pero ang ipinagtaka ko, hindi number ni Ma’am, nagkataon kasi may number ako ni Ma’am at friend ko din sa si Ma’am sa Facebook, eh nagtataka ako bakit number niya pero ang way ng pagsasalita niya ay siya si Ma’am kaya hindi ba sumugod ako doon sa ano ninyo [refers to the CBR office].*)” – Aniline

Despite these encounters, some of the respondents tend to ***cope from these negative experiences in order to maintain adherence*** (n=1) In the case of Aniline, she experienced miscommunication and coped by clarifying the necessary details regarding her home session schedule.

“There, you need to clarify first because if you get mad, your actions would go nowhere (*Ayon, dapat, lilinawin mo, kasi pag inuna mo yung biglang galit ka, bakit ganoon, eh siyempre walang mapupuntahan*).” – Aniline

In revelation of the 5 themes the conceptual framework is further described by series of events experienced by adult clients with stroke from *insights, motivations, and responses to exercise adherence*, as well as *positive and negative factors that affects their adherence* (see appendix A)

## **CONCLUSION AND RECOMMENDATION**

The purpose of this study in unraveling the experiences of adult clients with stroke in adherence to the home physical therapy program is not only strongly supported by related literature that identifies person- and program-related factors (Picorelli, et al, 2014), their undertaking in a community-based exercise program (Montgomery, et al, 2017) as well as its benefits (Moore, et al, 2014), but also an outcome that describes a pattern of processes which is inherent to the respondents. Its implication for practice would implore planning, implementing, and evaluating total quality management in physical therapy service provision under the EAC community-based rehabilitation program, whose administration, faculty, students, as well as the community are collaborating towards enhancement of the service-learning experience and achievement of optimal functional outcomes. Despite the limitations of the study in terms of generalizability due to (1) the time allotted for the project, and (2) limited sampling frame, future endeavors in this project would embark a multiple study design in order to explore other aspects inherent to exercise adherence.

## REFERENCES

- Abraham, C., & Sheeran, P. (2015). The Health Belief Model. In M. Conner, & P. (Norman, *Predicting and Changing Health Behavior* (p. 39). New York: McGraw Hill Open University Press.
- Alexander, J., Bambury, E., Mendoza, A., Reynolds, J., Veronneau, R., & Dean, E. (2012). Health Education Strategies Used by Physical Therapists to Promote Behavior Change in People with Lifestyle-Related Conditions: A Systematic Review. *Hong Kong Physiotherapy Journal*, 30, 57-75.
- Anar, S. (2016). The Effectiveness of Home-Based Exercise Programs for Low Back Pain Subjects. *The Journal of Physical Therapy Science*, 28, 2727-2730.
- Baker, D. (2006). The Meaning and Measure of Health Literacy. *Journal of General Internal Medicine*, 21, 878-883.
- Bass III, P., Wilson, J., Griffith, C., & Barnett, D. (2002). Residents' Ability to Identify Patients with Poor Literacy Skills. *Academic Medicine*, 77(10), 1039-1041.
- Bassett, S. (2003). The Assessment of Patient Adherence to Physiotherapy Rehabilitation. *New Zealand Journal of Physiotherapy*, 31(2), 60-66.
- Billek-Sawney, B., Reicherter, E., Yatta, B., & Duranko, S. (2012). Health Literacy: Physical Therapists' Perspectives. *Internet Journal of Allied Health Sciences and Practice*, 10(2), 1-6.
- Bollen, J., Dean, S., Siegert, R., Howe, T., & Goodwin, V. (2014, May 30). A Systematic Review of Measures of Self-Reported Adherence to Unsupervised Home-Based Rehabilitation Exercise Programs, and Their Properties. *British Medical Journal Open*, 4, 1-7.
- Boongaling, C., Bocade, M., Dayao, A., Domingo, C., Escudero, J., & Remo, F. (2012). *Cognitive Behavioural Training Enhances Adherence to Home Programs in Persons with Disabilities*. University of the Philippines - Manila, College of Allied Medical Professions. Manila: Unpublished.
- Briggs, A., & Jordan, J. (2010). The Importance of Health Literacy in Physiotherapy Practice. *Journal of Physiotherapy*, 56, 149-151.
- Chan, D., & Can, F. (2010). Patients' Adherence/Compliance To Physical Therapy Home Exercises. *Fizyoterapi Rehabilitasyon*, 21(3), 132-139.
- Chesnow, N. (2014, January 16). Why Are So Many Patients Non-Compliant? *The Noncompliance Epidemic*, p. 9. Retrieved from [www.medscape.com/viewarticle/818850\\_print](http://www.medscape.com/viewarticle/818850_print)
- Chetty, L. (2013). Innovative Interpretative Qualitative Case Study Research Method Aligned With Systems Theory for Physiotherapy and Rehabilitation Research: A Review of Methodology. *African Journal of Physiotherapy and Rehabilitation Sciences*, 5(1 - 2), 40-44.
- Cilesiz, S. (2010). *A Phenomenological Approach to Experiences with Technology: Current State, Promise and Future Directions for Research*. Education Technology Research and Development 59 487-510. DOI 10.1007/s11423-010-9173-2
- Clark, D. (1996). Age, Socioeconomic Status, and Exercise Self-Efficacy. *The Gerontologist*, 36(2), 157-164.
- Coetzee, N., Andrewes, D., Khan, F., Hale, T., Jenkins, L., Lincoln, N., & Disler, P. (2008). Predicting Compliance with Treatment Following Stroke: A New Model of Adherence Following Rehabilitation. *Brain Impairment*, 9(2), 122-139.
- Commission on Higher Education. (2007, April 2). *General Guidelines for the Physical Therapy and Occupational Therapy Internship Program*. Retrieved from Commission on Higher Education.
- Coyne, I. (1997). Sampling in Qualitative Research: Purposeful and Theoretical Sampling; Merging or Clear Boundaries. *Journal of Advanced Nursing*, 26, 623-630.

- D'Eath, M., Barry, M., & Sixsmith, J. (2012). *Rapid Evidence Review of Interventions for Improving Health*. Stockholm: European Center for Disease Prevention and Control.
- Dean, E. (2009). Physical Therapy in the 21st Century (Part I: Toward Practice Informed by Epidemiology and the Crisis of Lifestyle Conditions). *Physiotherapy Theory and Practice*, 25(5), 330-353.
- Dean, E. (2009). Physical Therapy in the 21st Century (Part II: Evidence-Based Practice within the Context of Evidence Informed Practice). *Physiotherapy Theory and Practice*, 25(5), 354-368.
- Doyle, F., Doherty, S., Morgan, K., McBride, O., & Hickey, A. (2012). Understanding Communication of Health Information: A Lesson In Health Literacy for Junior Medical and Physiotherapy Students. *Journal of Health Physiology*, 18(4), 497-506.
- Feigin, VL; Norrving, B; Mensah, GA (2017). *Global Burden of Stroke*. *Circulation Research* 120 439-448 DOI:10.1161/CIRCRESAHA.116.308413
- Frerichs, W., Kaltenbacher, E., van de Leur, J., & Dean, E. (2012). Can Physical Therapist Counsel Patients with Lifestyle-Related Health Conditions Effectively? A Systematic Review and Implications. *Physiotherapy Theory and Practice*, 28(8), 571-587.
- Gaikwad, S., Mukherjee, T., Shah, P., Ambode, O., Johnson, E., & Daher, N. (2016). Home Exercise Program Adherence Strategies in Vestibular Rehabilitation: A Systematic Review. *Physical Therapy Rehabilitation Science*, 5(2), 53-62.
- Gentles, S., Charles, C., Ploeg, J., & McKibbin, K. (2015). Sampling in Qualitative Research: Insights From an Overview of the Methods Literature. *The Qualitative Report*, 20(11), 1772-1779.
- Graham, C., Ivey, S., & Neuhauser, L. (2009). From Hospital To Home: Assessing the Transitional Care Needs of Vulnerable Seniors. *The Gerontologist*, 49(1), 23-33.
- Gibney, S; Doyle, G (2017). *Self-rated Health Literacy is Associated with Exercise Frequency among Adults Aged 50+ in Ireland*. *European Journal of Public Health* 27:1 755-761 <https://doi.org/10.1093/eurpub/ckx028>
- Groce, N., & Bakshi, P. (2009). *Illiteracy Among Adults with Disabilities in the Developing World: An Unexplored Area of Concern*. University College London, Leonard Cheshire Center for Disability and Inclusive Development. London: University College London.
- Harrison, T., Mackert, M., & Watkins, C. (2010). A Qualitative Analysis of Health Literacy Issues Among Women with Visual Impairments. *Research in Gerontologic Nursing*, 3(1), 49-60.
- Johnson, K., & Weiss, B. (2008). How Long Does It Take to Assess Literacy Skills in Clinical Practice. *Journal of the American Board of Family Medicine*, 21, 211-214.
- Jordan, J., Buchbinder, R., & Osborne, R. (2010). Conceptualising Health Literacy from the Patient Perspective. *Patient Education and Counseling*, 79, 36-42.
- Koh, H., Brach, C., Harris, L., & Parchman, M. (2013). A Proposed "Health Literate Care Model" Would Constitute A Systems Approach To Improving Patients's Engagement In Care. *Health Affairs*, 32(2), 357-367.
- Levasseur, M., & Carrier, A. (2010). Do Rehabilitation Professionals Need to Consider Their Clients' Health Literacy for Effective Practice? *Clinical Rehabilitation*, 24, 756-765.
- Levin-Zamir, D., Baron-Epel, O., Cohen, V., & Elhayani, A. (2016). The Association of Health Literacy with Health Behavior, Socioeconomic Indicators, and Self-Assessed Health From a National Adult Survey in Israel. *Journal of Health Communication*, 21, 61-68.
- Maneze, D., DiGiacomo, M., Salamonson, Y., Descallar, J., & Davidson, P. (2015). Facilitators and Barriers to Health Seeking Behaviors among Filipino Migrants: Inductive Analysis to Inform Health Promotion. *BioMed Research International*, 1-9.
- Marcus, B., & Simkin, L. (1994). The Transtheoretical Model: Application to Exercise Behavior. *Medicine and Science in Sports and Exercise*, 26(11), 1400-1404.

- Mason, M. (2010). Sampling Size and Saturation In PhD Studies Using Qualitative Interviews. *Forum: Qualitative Social Research, 11*(3), 8.
- Mateo, I. (2014, June 18). *Low Health Literacy Level Alarming, Making Filipinos "More Sick" - Doctor*. Retrieved March 10, 2017, from GMA News Online: <http://www.gmanetwork.com/news/story/366216/lifestyle/healthandwellness/low-health-literacy-level-alarming-making-filipinos-more-sick-doctor>
- McLean, S., Burton, M., Bradley, L., & Littlewood, C. (2010). Interventions for Enhancing Adherence with Physiotherapy: A Systematic Review. *Manual Therapy, 15*(6), 514-521.
- Medina-Mirapeix, F., Escolar-Reina, P., Gascon-Canovas, J., Montilla-Herrador, J., & Collins, S. (2009). Personal Characteristics Influencing Patients' Adherence to Home Exercise During Chronic Pain: A Qualitative Study. *Journal of Rehabilitation Medicine, 41*, 347-352.
- Moss, T. (2014). The Impact of Health Literacy on Clinical Outcomes for Adults with Type 2 Diabetes Mellitus. *Advances in Diabetes and Metabolism, 10-19*.
- Montgomery CA, Henning KJ, Kantarzi SR, et al. Experiences participating in a community based exercise programme from the perspective of people living with HIV: a qualitative study. *BMJ Open 2017; 7:e015861*. doi:10.1136/bmjopen-2017-015861
- Moore, SA; Hallsworth, K; Jakovljevic, DG; Blamire, AM; He, J; Ford, GA; Rochester, L; Trenell, MI (2014). Effects of Community Exercise Therapy on Metabolic, Brain, Physical, and Cognitive Function following Stroke: A *Randomized Controlled Pilot Trial*. Neurorehabilitation and Neural Repair 1-13 DOI: 10.1177/1545968314562116
- Nigg, C., English, C., Owens, N., Burbank, P., Conolly-Belanger, A., Dufresne, R., . . . Clark, P. (2002). Health Correlates of Exercise Behavior and Stage Change in a Community-Based Exercise Intervention for the Elderly: A Pilot Study. *Health Promotion Practice, 3*(3), 421-428.
- Novak, I. (2011). Effective Home Program Intervention for Adults: A Systematic Review. *Clinical Rehabilitation, 25*(12), 1066-1085.
- Nutbeam, D. (2000). Health Literacy as a Public Health Goal: A Challenge for Contemporary Health Education and Communication Strategies into the 21st Century. *Health Promotion International, 15*(3), 259-267.
- Nutbeam, D. (2008). The Evolving Concept of Health Literacy. *Social Science and Medicine, 67*, 2072-2078.
- Nutbeam, D. (2009). Defining and Measuring Health Literacy: What can We Learn from Literacy Studies? *International Journal of Public Health, 54*, 303-305.
- Osborn, C., Paasche-Orlow, M., Bailey, S., & Wolf, M. (2011). The Mechanisms Linking Health Literacy to Behavior and Health Status. *American Journal of Health Behavior, 35*(1), 118-128.
- Philippine Council for Health Research and Development. (n.d.). *Health Literacy*. Retrieved March 10, 2017, from Department of Science and Technology - Philippine Council for Health Research and Development: <http://www.pchrd.dost.gov.ph/index.php/news/library-health-news/3590-health-literacy>
- Picorelli, A., Pereira, L., Pereira, D., Felicio, D., & Sherrington, C. (2014). Adherence to Exercise Programs for Older People is Influenced by Program Characteristics and Personal Factors: A Systematic Review. *Journal of Physiotherapy, 151-156*.
- Prochaska, J., & Velicer, W. (1997). The Transtheoretical Model of Health Behavior Change. *American Journal of Health Promotion, 12*(1), 38-48.
- Rowley, J. (2002). Using Case Studies in Research. *Management Research News, 25*(1), 16-27.
- Sabate, E. (2003). *Adherence to Long-Term Therapies: Evidence for Action*. Geneva: World Health Organization.

- Schultz, P., & Nakamoto, K. (2005). Emerging Themes in Health Literacy. *Studies in Communication Sciences*, 5(2), 1-10.
- Seligman, H., Wallace, A., DeWalt, D., Schillinger, D., Arnold, C., Shilliday, B., . . . Davis, T. (2007). Facilitating Behavior Change with Low-Literacy Patient Education Materials. *American Journal of Health Behavior*, 31(1), s69-s78.
- Shumpert, K., Hunt, B., & Hall, M. (2013). *An Examination of the Role of Health Promotion in Physical Therapy*. South Toomsuba: Mississippi Association for Health, Physical Education, Recreation, and Dance. Retrieved from <http://msahperd.com/wp-content/uploads/2013/10/An-Examination-of-the-Role-of-Health-Promotion-in-Physical-Therapy.pdf>
- Sluijs, E., Kok, G., & van der Zee, J. (1993). Correlates of Exercise Compliance in Physical Therapy. *Physical Therapy*, 73(11), 771-786.
- Starfield, B. (2011). Is Patient-Centered Care the Same as Person-Centered Care? *The Permanente Journal*, 15(2), 63-69.
- Stickler, K. (2015). Adherence to Physical Therapy: A Qualitative Study. *Journal of Student Physical Therapy Research*, 8(1), 32-40.
- Su-Er, G., & Bruce, A. (2014). Improving Understanding of and Adherence to Pulmonary Rehabilitation in Patients with COPD: A Qualitative Inquiry of Patient and Client Perspectives. (10, Ed.) *PLoS ONE*, 9.
- Sum Lam, MH; Yee-Man Leung, A (2016). *The Effectiveness of Health Literacy Oriented Programs on Physical Activity Behavior in Middle Aged and Older Adults with type 2 Diabetes: A Systematic Review*. *Health Psychology Research* 4:5595 7-12  
<https://doi:10.4081/hpr.2016.5595>
- Tang, W; Li, Z; Tang, C; Wang, X; Wang, H (2017). *Health Literacy and Functional Exercise Adherence in Post-operative Cancer Patients*. *Patient Preference and Adherence* 11 781-786 <http://dx.doi.org/10.2147/PPA.S127925>
- World Confederation on Physical Therapy. (2003, October). Retrieved March 14, 2016, from [http://www.wcpt.org/sites/wcpt.org/files/files/Report-CBR\\_PHC\\_Briefing\\_paper.pdf](http://www.wcpt.org/sites/wcpt.org/files/files/Report-CBR_PHC_Briefing_paper.pdf)
- World Health Organization. (2003). *Adherence to Long-Term Therapies: Evidence for Action*. Geneva: World Health Organization. Retrieved from World Health Organization.
- World Health Organization. (2011). *Transformative Scale Up of Health Professional Education*.
- Yazan, B. (2015). Three Approaches to Case Study Methods in Education; Yin, Merriam and Stake. *The Qualitative Report*, 20(2), 134-152.
- Zarcadoolas, C., Pleasant, A., & Greer, D. (2005). Understanding Health Literacy: An Expanded Model. *Health Promotion International*, 20(2), 195-203.