Acta Scientific MEDICAL SCIENCES (ISSN: 2582-0931)

Volume 9 Issue 10 October 2025

Research Article

Factors Influencing Physical Activity Among Residents of Elderly Home Facilities in Guyana: A Pilot Study

Maria Sheena Villareal, Genalin Ang and Maritza Oliva Perez*

School of Medicine, College of Medical Sciences, University of Guyana, Guyana

***Corresponding Author:** Maritza Oliva Perez, Senior Lecturer, School of Medicine, College of Medical Sciences, University of Guyana, Guyana.

Received: August 13, 2025

Published: September 04, 2025

Abstract

This pilot study explored the levels of physical activity (PA) and the factors influencing participation among elderly residents of elderly home facilities (EHFs) in Guyana. With physical inactivity recognized globally as a major risk factor for chronic non-communicable diseases (CNCDs), understanding the patterns of PA in institutionalized older adults is crucial, especially in low- and middle-income countries where data is scarce. A cross-sectional descriptive design was employed involving 99 medically stable residents aged 55 and older across eight EHFs in Georgetown. Data was collected using structured interviews based on the Global Physical Activity Questionnaire (GPAQ), supported by demographic and health history information, functional assessments, and anthropometric measurements.

The findings revealed that 69.7% of participants had low levels of physical activity, with only a minority achieving high activity levels. Gender was significantly associated with PA levels ($p = 0.046$), with females being more active than males. Body Mass Index (BMI) was also significantly associated ($p = 0.038$), as overweight individuals were more likely to be physically inactive. Most other demographic and health factors—including age, education, ethnicity, mobility, and presence of chronic conditions—showed no statistically significant associations. However, notable trends suggested that longer residence in EHFs and poor self-perception of health were linked to lower activity levels.

Participants identified motivation and self-awareness as primary drivers of activity, while health concerns, low energy, and lack of encouragement were common barriers. Despite regular health visits, professional support for physical activity was minimal. These findings highlight the urgent need for targeted strategies to promote physical activity and reduce sedentarism in EHFs. This study provides valuable baseline data to inform future research and intervention programs aimed at improving the health and well-being of institutionalized older adults in Guyana.

Keywords: Physical Activity; Elderly; Elderly Home Facilities; Guyana; Chronic Non-Communicable Diseases

Abbreviations

BMI: Body Mass Index; CNCD: Chronic Non-Communicable Diseases; EHF: Elderly Home Facility; GPAQ: Global Activity Questionnaire; LMIC: Low to Middle-Income Country; PAHO: Panamerican Health Organization; PA: Physical Activity; MET: Metabolic Equivalent; MOH-IRB: Ethical Review Committee of the Ministry of Health; SPSS: Statistical Package for Social Sciences; TPB: Theory of Planned Behavior; WHO: World Health Organization

Introduction

The advancement of healthcare has resulted in the increasing elderly population, which is expected to double before the year 2050 [1]. Globalization and technological advances are both remarkable in increasing life expectancy in aging adults; however, this does not correlate to living healthier [2]. Technology advancement and fast phased lifestyle predisposed one to unhealthy living, sedentarism, obesity, and the growing pandemic of chronic non-communicable diseases (CNCDs), thus associating the condition as "lifestyle disease of the civilized" [1,3]. Understanding these growing threats in the lives of the aging population is crucial to the meaningful prevention and control of CNCDs [3].

According to the Pan American Health Organization (PAHO), in the region of the Americas, the reality of CNCDs is felt most with 4-out of -5 deaths directly related to it, and that this number is expected to continue onto the next decades to come [4]. The latest evidence further suggested that CNCDs affect everybody, any age, beginning early in life and predominantly high among older population concerning long-time exposure to an unhealthy lifestyle [1]. CNCDs are also directly linked to an unhealthy diet, physical inactivity, sedentary behavior, and sedentarism, which means any waking behavior with less than 1.5 METs in sitting or recline [5]. CNCDs are devastating in the older generation because of their multifactorial causality. Combining an unhealthy diet, low physical activity, and sedentarism with the length of exposure time speed up typical deterioration in a somewhat normal healthy aging process.

The World Health Organization (WHO) suggested that low physical activity in itself is the fourth leading mortality risk, with adverse spiral morbidity commonly seen in low to middle-income countries [LMICs] [6]. In Guyana, there has been no known research data to date pertaining to how physical active is the population at large and the elderly. Instead, annual health records in Guyana shows the incidences of CNCDs with ischemic heart disease as the principal cause of death and frequent health visits, followed by high blood pressure, and diabetes [7]. The Ministry of Public Health Guyana further added that keeping up to the high demand and expense of CNCDs is a huge challenge that creates a massive constraint to the country's annual medical budget [7].

Interest in the physical activity levels of older adults emerged following observations conducted during visits to several elderly home facilities (EHFs) as part of the official curriculum for the Human Growth and Development course, as well as health outreach activities conducted by students at the University of Guyana. Administrators at these facilities have consistently reported a lack of participation in physical activities among residents, despite many being physically capable—raising significant concerns about their overall health and well-being [8]. In contrast, some EHFs have noted that residents who are actively engaged in work-related tasks experience positive effects on their well-being. These contrasting observations prompt further inquiry into the activity levels of older adults in EHFs and the factors influencing their participation in physical activity.

In the booklet "Minimum Standards for Elderly Residential Facilities in Guyana", the Ministry of Social Protection identified fourteen EHFs mostly located in central Georgetown district [9]. However, the Ministry also indicated that the actual number of these EHFs was still unknown. The lack of available data in Guyana about the exact number of EHFs, types of services offered, actual population per facility, age-range grouping, and physical activity levels are equally important information that needs to be surveyed and captured, making it an ideal ground for research. The research initiative of acquiring initial evidence and record is therefore welcome.

The goal of this pilot project is to conduct a general census of elderly residents, similar to the approach used by the WHO to gather data on their level of participation in physical activity. The study places particular emphasis on identifying factors influencing participation and examining variations across different age groups within elderly home facilities (EHFs), especially among residents commonly presumed to be inactive. This initiative also responds to the WHO's mandate emphasizing the critical role of physical activity in addressing the global burden of chronic non-

communicable diseases (CNCDs), physical inactivity, and their adverse effects on health [6]. Physical inactivity in itself ranked fourth as the cause of mortality linked to CNCDs, both of which are considered to be a real public health issue that requires baseline data to determine its extent in the elderly including those who are residing in EHFs [6,10]. As one of key stakeholders and training institutions, we build in partnership with various healthcare organizations, government, and private individuals to provide quality and equality of healthcare across the lifespan, not excluding the most vulnerable sector of our society. This pilot research project envisions establishing new partnerships and strengthen existing collaborations among stakeholders, expanding knowledge on the topic, and in the future, develop a more focused project about fitness in old age, wellness, and elderly care health.

This study intends to improve the lives of aging adults living in elderly homes facilities in Guyana and closely aligning the project with the World Health Organization physical activity guidelines and eye health for older people and with specific attention to:

- Gathering preliminary information and description of the physical activity level of participation of aging adults living in the EHFs.
- Exploring the various factors influencing participation in physical activity and exercise (PA/E) among elderly residents.
- Providing a source of preliminary data for future research on the topic of elderly fitness, wellness, and eye care health that will ultimately inform the development of program specific to the elderly population and those in EHFs in Guyana.

Materials and Methods

Study design

This study was conducted to enhance researchers' knowledge through observation and interview of healthy aging adults living in eight elderly home facilities in Guyana. The design type used is a cross-sectional descriptive study focusing on determining the level of physical activity among relatively healthy residents in EHFs and taking a snapshot description of variables that may influence their level of participation. The independent variable in this study is the level of physical activity of residents, while dependent variables predict the level of participation, such as demographic information, health history, arthrometric measures, and daily functioning.

Study setting and participants

Ten EHFs were randomly selected initially. However, only eight provided approval from the respective authorities. Participating EHFs were all situated in central Georgetown district and comprised of both private and government owned. Data collection and fieldwork of this research were between late December 2018 until June 2019.

A sample of 104 residents out of an initial target of 100 using 5% marginal error and 95% confidence level were chosen based on health records, anthropometric data, cognitive screening, and inclusion criteria. The inclusion criteria included medically stable individuals, at least 55 years and over based on Guyana's retiring age of 55 for government employees [9]. Also, the individual must be living in EHFs for at least six months and has stable recall memory to answer based on weeklong physical activity participation. Individuals were excluded from research if they had hearing difficulties and if they were non-English speakers. Out of 104 sampled, five were excluded due to uncompleted forms and with a final sample size of the ninety-nine (n = 99).

Procedures for recruitment and consent

Before conducting the study, the research team obtained the necessary permission and ethical clearance from both the Ethical Review Committee of the Ministry of Health (MOH-IRB). Following this, a pre-testing of questionnaires sampled to a group of elderly to ascertain validity, usability, and clarity before proceeding into the actual study. Ten out of fourteen EHFs were initially selected at random. However, only eight facilities gave consent for research. Site visits were done immediately after receiving approval from the Ministry of Public Health Institutional Review Board [IRB] and Ministry of Social Protection in early December 2018, while permission from private EHFs was received after several visits in the first quarter of 2019. After authorization was received, site administrators were to identify eligible seniors to gather for discussion about the research intention and ethical consideration. After participants gave consent, cognitive screening was implemented using the mini-mental state exam. Finally, out of 104 residents, ninety-nine samples (n= 99) completed the process, five participants had incomplete forms and excluded.

Data were collected using structured interviews with questions adapted from questionnaires Global Activity Questionnaire [GPAQ] and RAND Health Survey to measure the level of physical activity

into high, moderate, and low physical activity. Demographic information, health history, functional ability, anthropometric data, and overall emotional-wellbeing were also captured. The GPAQ tool is a widely used, valid, and reliable measurement that records the level of PA/E participation, adaptable to various cultures and in LMICs [11,12]2012. The residents were then asked to reflect on their weeklong physical exertion at work, home, travel, or recreation and to indicate activities that cause a high or medium-rise in a heartbeat within at least ten minutes and specify how frequent within one week [13]. Cue cards were also utilized during an interview to clarify activities between high (vigorous) or medium (moderate) intensity.

The investigators in this research followed the standard protocol in administering questionnaires. Necessary safety precautions were utilized in handling patients, particularly in collecting anthropometric data. Hand washing, proper calibration, sanitization of equipment, proper recording, and interview sessions were supervised by principal investigators. Patient safety, privacy, proper record keeping, and efficient time management were an essential component of this research.

Statistical analysis

Data analysis was conducted using the Statistical Package for Social Sciences (SPSS) version 21 software. The principal investigators coded the raw data into a dataset. Descriptive statistical methods, including frequency distributions, means, and standard deviations, were employed to ascertain the studied phenomena. The level of physical activity was determined using the GPAQ tool, calculated based on computing metabolic rates (METs), number of days, and time per week. A high PA-level means that in each week, the resident has acquired a total of 1500 or more METs, with activity frequency of 3-7 days, for at least 150 minutes. In contrast, PA-level is moderate; if in a week, the Mets were between 600 to 1500, plus 3-7 days and between 60-150 minutes. Finally, low PA-level happens when METs were less than 600, plus the frequency of 3 days or less and within 60 minutes or less. Information on demographics, health history, functional ability, and overall emotional wellbeing was also captured, along with basic anthropometric (blood pressure, height, weight, and waistline measurement). Additionally, cross-tabulation analysis and a chi-square test were used to identify associations between the variables under study. Any p-value less than 0.05 was considered significant, adhering to a 5% significant level.

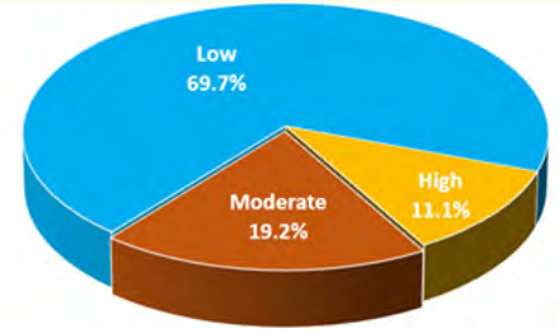
Ethical considerations

The study received ethical approval from the Guyana Ministry of Health Institutional Review Board and the Ministry of Social Protection. Researchers accessed the EHFs after having permission from their directors. Informed consent was obtained for all the participants after explaining the objectives of te study and clarifying all their questions/concerns. The study didn't pose any risk and did not impact patients' rights, welfare, or care. Confidentiality was strictly maintained, with all records securely stored in an encrypted database and personal identifiers excluded from any publications. In accordance with ethical guidelines, documents will be retained for six years before being securely destroyed. The study is exempt from additional regulatory retention or inspection requirements.

Results

The study included a total of 99 elderly participants, with 61 residing in private elderly care facilities and 38 from public facilities. The mean age was 75.4 years (SD = 10.7), with the largest proportion being young-old (35.4%), followed by middle-old (27.3%), old-old (23.2%), and seniors (14.1%). Females comprised the majority (56.6%) of the population. In terms of ethnicity, nearly half were Afro-Guyanese (47.5%), followed by Indo-Guyanese (26.3%), Mixed (17.2%), Amerindian (4.0%), and other ethnicities (5.1%). Educational attainment varied, with most participants having completed only primary education (44.4%), while smaller percentages had secondary (17.2%), CSEC (19.2%), CAPE (5.1%), or college/university education (7.1%); a few (6.1%) had no formal schooling, and one individual declined to disclose their educational background. Regarding marital status, the largest group had never been married (44.4%), followed by widowed individuals (34.3%), those currently married or cohabiting (11.1%), and separated or divorced (10.1%).

The activity level of relatively healthy elderly residents was predominantly low. The prevalence of low physical activity level was 69.7% (Graph 1).



Graph 1: Physical Activity Levels of Participants.

Table 1 summarizes the relationship between physical activity levels and various demographic and contextual factors among elderly individuals. Overall, the majority of participants reported low levels of physical activity across all groups. A statistically significant association was found with gender (p = 0.046), with a higher proportion of females (17.9%) engaging in high physical activity compared to males (2.3%). Although not statistically significant, some variation was observed by ethnicity (p = 0.089), with Indo-Guyanese and Mixed participants more likely to report high activity, while all Amerindian participants reported low activity. Age was not significantly associated with physical activity (p = 0.374), though mean age increased from the high to low activity groups. Other factors such as education level (p = 0.838), marital status (p = 0.924), and type of elderly home facility (p = 0.278) showed no significant associations with physical activity. These findings suggest that gender may play a role in physical activity engagement among elderly individuals, while most other factors showed limited influence in this sample.

Participants of this study lived for at least two years in EHFs, noting a higher proportion of residents who had lived in the facility for five years or less reported high (13.3%) and moderate (14.7%) physical activity levels, compared to those living there for more than five years, who showed only 4.2% with high activity and 33.3% with moderate activity. While this association did not reach statistical significance ($p = 0.086$), the trend suggests that a shorter duration of residence in the EHF is associated with higher physical activity, possibly indicating that physical function declines the longer individuals remain institutionalized.

Regarding satisfaction with living in the EHF, residents who described their experience as "very happy" or "happy" reported somewhat higher levels of physical activity. Among those who were "very happy," 17.6% had high activity and 23.5% had moderate activity. Similarly, in the "happy" group, 10.5% had high activity and 18.4% had moderate activity. In contrast, those who reported being "not happy" had 0% high and 33.3% moderate activity, with the remainder being inactive. However, this association was also not statistically significant (p = 0.829).

In summary, although neither variable showed statistically significant associations with physical activity levels, the patterns observed suggest that longer institutionalization and lower satisfaction with living conditions may be linked to lower physical activity among elderly residents.

Table 2 explores the association between physical activity levels and various health status indicators among elderly individuals. Overall, most participants reported low levels of physical activity, regardless of their health status. A statistically significant association was found only for Body Mass Index (BMI) (p = 0.038), where individuals with normal weight or underweight status were more likely to engage in higher levels of physical activity, while 95.7% of those who were overweight reported low activity levels.

Factors	Physical Activity Levels			P value
	High No.(%)	Moderate No.(%)	Low No.(%)	
Age Mean (S. Deviation)	 71,55 (11,85)	 74,63 (9,83)	 76,28 (10,73)	0.374*
Gender Male Female	 1 (2,3) 10 (17,9)	 10 (23,3) 9 (16,1)	 32 (74,4) 37 (66,1)	0.046

Ethnicity				
Indo-Guyanese	6 (23,1)	5 (19,2)	15 (57,7)	0.089
Afro-Guyanese	1 (2,1)	11 (23,4)	35 (74,5)	
Amerindian	0 (0,0)	0 (0,0)	4 (100)	
Mixed	4 (18,2)	3 (13,6)	15 (68,2)	
Education				
Higher education	8 (11,9)	12 (17,9)	47 (70,1)	0.838
Lower education	3 (9,7)	7 (22,6)	21 (67,7)	
Marital status				
Never Married	5 (11,4)	9 (20,5)	30 (68,2)	0.924
Currently Married	1 (9,1)	3 (27,3)	7 (63,6)	
Separated/divorced	2 (20,0)	1 (10,0)	7 (70,0)	
Widow/widower	3 (8,8)	6 (17,6)	25 (73,5)	
Type of EHF				
Government	2 (5,3)	9 (23,7)	27 (71,1)	0.278
Private	9 (14,8)	10 (16,4)	42 (68,9)	
Time living in EHF				
≤ 5 years	10 (13,3)	11 (14,7)	54 (72,0)	0.086
> 5 years	1 (4,2)	8 (33,3)	15 (62,5)	
Exp. in living EHF				
Very happy	3 (17,6)	4 (23,5)	10 (58,8)	0.829
Happy	4 (10,5)	7 (18,4)	27 (71,7)	
Reasonable	4 (10,3)	5 (12,8)	30 (76,9)	
Not Happy	0 (0,0)	1 (33,3)	2 (66,7)	

Table 1: Level of Physical Activity by Demographic Factors

* p-value from independent t-test; all others are from chi-square tests.

No significant associations were observed between physical activity and other health-related variables, including perceived current health status (p = 0.451), perceived health compared to the previous year (p = 0.384), number of morbid conditions (p = 0.682), smoking status (p = 0.520), hypertension (p = 0.609), diabetes (p = 0.058), and mobility status (p = 0.237). However, a borderline trend was noted with diabetes, where a slightly higher proportion of non-diabetics reported low physical activity. These findings suggest that BMI may play a role in determining physical activity levels among older adults, while most other health-related factors in this sample did not show strong associations.

Factors	**Physical Activity Levels**			**P value**
	High No.(%)	**Moderate No.(%)**	**Low No.(%)**	
Perceived Current Health				
Excellent	1 (14,3)	1 (14,3)	5 (71,4)	0.451
Very Good	3 (37,5)	2 (25,0)	3 (37,5)	
Good	4 (10,0)	8 (20,0)	28 (50,0)	
Fair	2 (6,5)	5 (16,1)	24 (77,4)	
Poor	1 (7,7)	3 (23,1)	9 (69,2)	
Perceived health Vs. Last year				
Better than last year	6 (17,1)	5 (14,3)	24 (68,6)	0.384
Same as last year	4 (9,3)	11 (25,6)	28 (65,1)	
Worse than last year	1 (4,8)	3 (14,3)	17 (81,0)	

No. Of Morbid Conditions None One condition More than one condition	 3 (18,8) 2 (6,9) 6 (11,1)	 4 (25,0) 6 (20,7) 9 (16,7)	 9 (56,2) 21 (72,4) 39 (72,2)	0.682
Body Mass Index Underweight Normal Overweight Obese	 3 (14,3) 4 (10,8) 0 (0,90) 4 (22,2)	 5 (23,8) 11 (29,7) 1 (4,3) 2 (11,1)	 13 (61,9) 22 (59,5) 22 (95,7) 12 (66,7)	0.038
Smoking Yes No	 2 (6,1) 9 (13,6)	 7 (21,2) 12 (18,2)	 24 (72,7) 45 (68,2)	0.520
Hypertension Yes No	 4 (8,0) 7 (14,3)	 10 (20,0) 9 (18,4)	 36 (72,0) 33 (67,3)	0.609
Diabetes Yes No	 7 (21,2) 4 (6,1)	 7 (21,2,7) 12 (18,2)	 19 (57,6) 50 (75,8)	0.058
Mobility Walk independently Walk with assistance Walk with walking device Unable to move	 8 (15,1) 3 (18,8) 0 (0,0) 0 (0,0)	 10 (18,9) 3 (18,8) 6 (27,3) 0 (0,0)	 35 (66,0) 10 (62,5) 16 (72,7) 7 (100)	0.237

Table 2: Physical activity levels regarding health status.

The most predominant health issues among respondents were emotional concern (71.8%), and body pains (53.5%), while the most common chronic non-communicable disease (CNCDs) is hypertension (50.5%), followed by obesity (41.4%), diabetes (33.3%) and smoking (33.3%). Generally, walking is the most commonly used form of PA/E among residents (39.4%).

Table 3 provides insight into the types of physical activity most commonly practiced by participants and the amount of time they spend sitting each day. Walking emerged as the most frequently reported form of physical activity, cited by 39.4% of participants. This suggests that walking is a relatively accessible and preferred mode of staying active among the population studied. Other forms of physical activity were much less common. Limb exercises, such as stretches or light resistance movements, were reported by 12.1%, while recreational activities such as dance or sports were practiced by only 3.0% of participants. A small proportion reported being active through household chores (5.1%) or travel and social activities (1.0%). Notably, a large portion—38.4%—were unsure about the type of physical activity they engaged in, which may point to either a lack of structured activity or difficulty in recognizing routine movement as physical activity.

Factors	**Frequency**	**Percentage**
Form of Physical Activity		
Walking	39 (39.4)	39.4
Limb exercises	12 (12.1)	12.1
Recreation-dance/sports	3 (3.0)	3.0
Work/home choirs	5 (5.1)	5.1
Travel/socials	1 (1.0)	1.0

Unsure	38 (38.4)	38.4
Sitting Time per day in hours		
1 to 5	10	10.1
6 to 10	73	73.7
11 to 15	16	16.2

Table 3: Frequently used form of Physical Activity and Sitting Time per day.

Regarding sitting time, most participants (73.7%) reported spending 6 to 10 hours per day seated, indicating a predominantly sedentary lifestyle. Additionally, 16.2% reported sitting for 11 to 15 hours daily, while only 10.1% spent 1 to 5 hours sitting per day. These findings suggest that sedentary behavior is prevalent in the population, with the majority exceeding 6 hours of sitting time per day, which could pose significant health risks if not balanced with adequate physical activity.

Table 4 outlines participants' motivations, perceived barriers, and willingness to engage in physical activity programs. Regarding motivation for physical activity, the most frequently cited reasons were self-awareness (38.4%) and health benefits (12.1%), indicating that personal responsibility and recognition of health value play key roles in encouraging activity. Interestingly, an equal proportion of participants (38.4%) reported being unsure of what motivated them, suggesting a possible lack of internal reflection or awareness about the importance of physical activity. Less commonly mentioned motivators included group participation (6.1%), previous sports participation and military affiliation (2.0% each), and recommendations from a doctor or caregiver (1.0%).

When participants were asked about barriers to physical activity, health limitations were the most common obstacle, reported by 41.4% of respondents. This reflects the significant impact that physical or medical conditions may have on individuals' ability to remain active. Another 20.2% cited lack of motivation or laziness, pointing to psychological or behavioral hurdles. Other barriers included lack of infrastructure (8.1%), age (5.1%), and restrictions from a healthcare provider or caregiver (2.0%). Notably, 23.2% of participants were unsure about what prevented them from participating in physical activity, which, like the motivational findings, suggests an opportunity for improved health education and engagement.

Factors	**Number (percentage)**
Motivation to Physical Activity Participation	
Health benefits	12 (12.1)
Self-awareness	38 (38.4)
Group participation	6 (6.1)
Previous sports participation	2 (2.0)
Previous military affiliation	2 (2.0)
Recommended by doctor or caregiver	1 (1.0)
Unsure	38 (38.4)
Barriers to Physical Activity Participation	
Health	41 (41.4)
Motivation/laziness	20 (20.2)
Lack of infrastructure	8 (8.1)
Restricted by doctor or caregiver	2 (2.0)
Age	5 (5.1)
Unsure	23 (23.2)
Willingness to be a part of exercise program in future	
Yes	57 (57.6)
No	20 (20.2)
Maybe	17 (17.2)
Unsure	5 (5.1)

Table 4: Motivation, Barriers and Willingness to participate in Physical Activity.

Despite the challenges, 57.6% of participants expressed willingness to participate in an exercise program in the future, showing promising potential for intervention. An additional 17.2% responded with "maybe," indicating further openness to engagement under the right circumstances. However, 20.2% stated they were not willing to participate, and 5.1% were unsure. These

findings suggest that while there is a solid base of participants interested in becoming more active, tailored strategies may be needed to address uncertainties and overcome specific barriers to increase participation further.

Summary of key findings

- Physical inactivity is found to be prevalent among residents of the elderly home (69.7%), Women are predominantly living in private-owned EHF, while men are in public. Results also showed that participants who are living in private EHFs are more active than those in the public EHF.
- In terms of socio-demographic findings, the physical activity level is found to be generally low among the residents regardless of their age group, gender, ethnical background, and marital status variables. Age- It is noted, however, that the mean age is lower among those with higher levels of physical activity. Gender- Women are seen to be more physically active compared to men ($p < 0.046$). Ethnicity- Afro-Guyanese race is the most predominant (47.5%) and the lowest level of physical activity, while Indo-Guyanese is the most active. Civil status- unmarried and widows are the most predominant residents in EHF, while widows are the most physically inactive.
- In terms of factors influencing PA/E participation, findings revealed that length of stay in EHFs is directly related to inactivity. As such, respondents who live five years or less are more physically active; however, the correlation between length of stay and age factor needs to be investigated in future research.
- Health is another factor noted in this research. The most common health issue includes emotional (71.8%), body pain (53.5%), hypertension (50.5%), overweight-obesity (41.4%, p 0.038), diabetes (33.3%, p 0.05), and history of smoking (33.3%).
- Research also determined that respondents who are happy or very happy were active. Motivation or barriers to physical activity participation was influenced by perception of general health, personal, and social motivation. Ironically, the study also recorded that even with regular visits to healthcare providers (63.6%), few respondents were encouraged (1%) or discouraged (2%) to participate in any form of physical activity.
- Our study results identified walking (34.4%) as the most common form of physical activity among residents, followed by limb exercise (12.1%). In addition, 38.9% of participants do not understand the meaning of physical activity and exercise.
- Finally, sitting for more than six hours of wake time is predominant among respondents (89.9%).

Discussion

To our knowledge, the research topic is the first of its kind in Guyana. It is evident in our findings that many of the earlier assumptions were right, and several factors may have influenced the low level of PA/E participation among residents. The prevalence of inactivity and sedentarism among respondents was noted. Respondents over 64 years were the most inactive compared to seniors below 64 years, denoting a strong affinity between inactivity with increasing age and deterioration of biological system [3,14]. Further, the findings indicated that even though both sexes are physically inactive, women are more active than men (p 0.046). In comparison to several studies that older women are generally more health-conscious, independent and socially active than men of similar age as noted by Ribeiro., *et al*. [15], and Virtuoso Junior., *et al*. [16]. Another possible reason why women are more active than men is that most women in this study are living in private-owned which provided similar services to retirement or assisted-living homes. In contrast, while men who are living in public EHFs are geared towards supportive nursing care. The investigators, however, suggested further investigation on a much larger sample size be done in the future to provide strong conclusive evidence on gender as a causative factor leading to physical inactivity among residents and not variance in sample size. In the future, there is a need to identify all EHFs operating in Guyana and to determine the residents' characteristics as well as the kind of services offered to them.

Additionally, in our study, health concerns and self-awareness were identified that motivate or prevent respondents from participating in physical activity. This result coincides with the earlier studies that health status and self-awareness can lead to either involvement or non-participation to physical exertion depending on individual perception [17,18]. Similarly, Ribeiro., *et al*. [15], observed a correlation between poor health perception, gender, culture and loneliness as factors of physical inactivity.

The taskforce on physical activity and exercise for older adults recommended adding elements of self-awareness and motivation to build-up positive attitude toward regular PA/E participation among residents, based upon the theory of planned behavior (TPB) [19]. TPB model highlighted that self-motivation is the center of behavior linked to the development of attitude, personal standard, and control [20,21]. In lowering CNCDs, PA/E participation among residents, along with the motivation to reduce functional disability and frailty, and keeping the elderly independence, as well as foster cognitive and self-confidence, is beneficial [1,2]. Moreover, visual problems that are common among elderly need to be investigated in more depth in the future since this factor may affect the confidence to perform daily chores that leads to fear of falling, according to Landinhgham., *et al*. [23] and Smith., *et al*. [25]. In our study, influence of vision on physical activity was not fully discovered and can be an area for future investigation.

The influence of environmental and social factors on elderly inactivity is another area of interest. In our study, it is noted that walking is the most common form of physical exertion among residents (39.4%). However, safety in the road is also a significant concern to physical exertion and participation, as identified by most respondents since the EHFs are also situated within the urban district of Guyana. Interestingly, the study of Gaskin and Orellana [3] noted that elderly who are living in rural areas are more assured of their environmental safety especially at night. Therefore, they are more socially engaged and active compared to their urban counterparts. Besides, Bjornsdottir., *et al*. [18] noted that rural dwellers are more active with the performance of daily chores without highly relaying to technology or electronic devices found in most urban settings.

In comparison to our study population, the residents indicated that they have less opportunity to participate in daily chores or exercise because they were not encouraged due to fear of worsening health condition which is also similar to studies by Aro., *et al*. [25] and Bjornsdottir., *et al*. [18]. As noted in the result of our study that healthcare professionals and caregivers neither offer encouragement (1%) nor restriction (2%) in PA/E participation, even though health visit is high (55.6%). This observation may be attributed to old belief that health deterioration is normal to aging and that physical exertion worsens age-related chronic condition [25], despite the positive response to PA/E among the oldest old and frail population according to various studies [17,25,26].

Other findings from our study revealed high sedentary behavior with more than six hours of sitting per day (89.9%) among residents, while engagement to home chores was not encouraged, although the use of digital devices and social discussion among residents were not restricted. Current evidence strongly suggested that sedentary behaviors (prolong sitting or reclining posture) often caused functional decline and disability, leading to high all-cause mortality rates [17]. In an earlier report by Barlow and the Ministry of Social Protection [9], physical inactivity and sedentarism among the elderly are predominant due to lack of organized exercise programs within the EHFs, which is confirmed in our study. Finally, based on our study, physical idleness was seen as the length of stay in EHFs also increases. Participants who lived for five years or less are happier compared to those living over five years in the residential facility, while residents who are happy or very happy are more likely to engage in physical activity and those with a poor perception of health and multiple co-morbidities.

While this research aims to identify the occurrence and level of physical activities of senior residents of elderly home facilities in Guyana, it also hopes to find the factors that impact PA/E participation. Aside from the research assumption, investigators also noted that participation in PA/E is influenced by self-motivation. The theory of planned behavior provides an excellent theoretical background in many health attitudes and has successfully predicted the association between factors, intention, behavioral control, and power in exercise participation [20,27]. According to the theory, self-motivation plays a central role in our social behavior, also linked to our attitude, personal standards, behavioral belief, perception and control [20]. TPB is said to motivate participation when the individual perceives the outcome as necessary, socially acceptable, and that they can control the outcome [28]. Utilizing the TBP as study framework, the researchers believed that there is a relationship between TBP factors (personal motivation, own standard, belief system, and perception of control) and the prediction of exercise participation among residents of elderly homes. Although this pilot study will only attempt to describe the population, the theory behind self-motivation can further expound in much broader research in the future.

Limitations

This pilot research project is the first known study to approach the subject of physical activity level among aging adults living EHFs

in Guyana. Since this is the first of its kind, it managed to probe into unknown territory, identifying demographic data of the population as well as recognized the varying age ranges which were previously unknown. The study provided valuable baseline information beyond the scope of the study as it probes factors about health status and wellbeing, as well as respondents' motivation and barrier influencing participation.

This study also has certain limitations and some potential biases, for instance, the sample in this study is not random or national representative since the actual number of EHFs remain unknown even though the study reflects a good representation of the population. Therefore, care in generalizing the result may be necessary. Second, the use of subjective assessment in the form of survey interviews rather than objective assessment. Although subjective assessment may offer benefits such as cost-effectiveness for a country of limited resources and is an appropriate tool for the pilot study for generally untested populations, it remains prone to biases. Third, the complexity of methodology design and cross-sectional design as causality is difficult to determine. Moreover, the small sampling size that did not allow to determine statistically better significance. Similar to the observation by de Souto Barreto., *et al*. [19], EHFs residents in Guyana also has a heterogeneous aging population, which has varying needs and requires different degree of specialized services and intervention approach depending on physical activity level. Also, it is essential to point out the need for stronger support to advocate for early physical activity for new residents and early detection of physical weakness and changes in activity habits as recommended by experts [1].

Conclusion

The central findings from this research concluded that physical inactivity is predominant to aging residents of EHFs. Sedentarism is another found among the study participants with more than six hours of awake in sitting and reclining positions. Factors related to physical inactivity based on our research included notable factors related to demographic findings such as age, gender, marital status and race. The environmental issue on safety to walk, social interaction along with the poor perception of health, history of the condition and emotional issues, and motivation are among the multifaceted and intertwined factors influencing the physical activity level of participants. The lack of structured PA/E program along with an unclear directive to either motive or restrict participation to physical activity among aging adults were critical to boosting self-confidence and motivation. World health leaders and health expect advocated for managing CNCDs beyond just treatment but for meaningful functional independence as a goal in aging.

It is the goal of our research to find meaningful preliminary data that can be used as a platform for a future more thorough investigation that will ultimately facilitate the development of health policy and intervention programs. This will require future investigation since the multifactorial nature of physical inactivity among respondents that intertwined into the physical, social, and environmental aspects since it is vital in determining behavior and participation noted in the Physical Activity Guidelines Advisory Committee [17].

Author Contributions

All three authors contributed substantially to the conception and design of the work, as well as the acquisition, analysis, and interpretation of data. All authors reviewed the final submission. They also agreed to be accountable for all aspects of the work, ensuring that any questions related to its accuracy or integrity are properly addressed.

Funding

This research received no external funding.

Institutional Review Board Statement

Approval to conduct the study was granted by the IRB of the Ministry of Public Health of Guyana (New Protocol No: 474).

Data Availability Statement

Data is available on reasonable requests from the corresponding Author.

Acknowledgments

The authors sincerely thank the staff from the EHFs who kindly collaborated with the researchers on data collection.

Conflicts of Interest

The authors declare no conflicts of Interests.

Bibliography

1. Rikli Roberta and C Jessie Jones. "Senior Fitness Test". 2nd ed., Enhanced ed., Amazon (2012).

2. Barker Elizabeth C. "Prescription of Exercise in Older Adults, Physiotherapeutic Approach". *Medical and Clinical Research* 2.5 (2017): 4.

3. Gaskin Cadeyrn J and Liliana Orellana. "Factors Associated with Physical Activity and Sedentary Behavior in Older Adults from Six Low- and Middle-Income Countries". *International Journal of Environmental Research and Public Health* 15.5 (2018).

4. Pan American Health Organization. "Health Status of the Population: Noncommunicable Disease Prevention and Control". *Health in the Americas* (2017).

5. González Karen., *et al*. "Physical Inactivity, Sedentary Behavior and Chronic Diseases". *Korean Journal of Family Medicine* 38.3 (2017): 111.

6. World Health Organization. "Global Strategy on Diet, Physical Activity and Health: Physical Activity and Older Adults". (2018).

7. Ministry of Health, Guyana. "Strategic Plan for NCDs Prevention & Control—2013-2020 Guyana". (2013).

8. Roberts C. "Personal communication". March (2016).

9. Barlow Sharon and Ministry of Social Protection. "Minimum Standards for Elderly Residential Facilities in Guyana". (2016).

10. Träff Anna M., *et al*. "Perceptions of Physical Activity among Elderly Residents and Professionals in Assisted Living Facilities". *European Review of Aging and Physical Activity* 14.2 (2017): 1-10.

11. Bauman Adrian., *et al*. "The International Prevalence Study on Physical Activity: Results from 20 Countries". *The International Journal of Behavioral Nutrition and Physical Activity* 6 (2009): 21.

12. Macniven Rona., *et al*. "A Review of Population-Based Prevalence Studies of Physical Activity in Adults in the Asia-Pacific Region". *BMC Public Health* 12.1 (2012): 41.

13. World Health Organization. "WHO STEPS Surveillance Manual". (2017).

14. Goodman Catherine and Kenda S Fuller. "Pathology: Implications for the Physical Therapist". 4th ed. (2015).

15. Ribeiro Adriana Q., *et al*. "Prevalence and Factors Associated with Physical Inactivity among the Elderly: A Population-Based Study". *Revista Brasileira de Geriatria e Gerontologia* 19.3 (2016): 483-493.

16. Virtuoso Júnior Jair S., *et al*. "Physical Activity as an Indicator of Predictive Functional Disability in Elderly". *Revista Latino-Americana de Enfermagem* 20.2 (2012): 259-265.

17. 2018 Physical Activity Guidelines Advisory Committee. "2018 Physical Activity Guidelines Advisory Committee Scientific Report". U.S. Department of Health and Human Services (2018).

18. Bjornsdottir Gudrun Sigridur A Arnadottir and Sigridur Halldorsdottir. "Facilitators of and Barriers to Physical Activity in Retirement Communities: Experiences of Older Women in Urban Areas". *Physical Therapy* 92.4 (2012): 551-562.

19. De Souto Barreto., *et al*. "Recommendations on Physical Activity and Exercise for Older Adults Living in Long-Term Care Facilities: A Taskforce Report". *Journal of Nursing Home Research* 2 (2016): 7-20.

20. Biddle Stuart J H., *et al*. "Theoretical Frameworks in Exercise Psychology". Handbook of Sport Psychology, edited by Gershon Tenenbaum and Robert C. Eklund, Wiley (2012): 537-559.

21. Buchan Duncan S., *et al*. "Physical Activity Behaviour: An Overview of Current and Emergent Theoretical Practices". *Journal of Obesity* (2012): 546459.

22. Suh Soo-Ryun and Young-Mi Kim. "Factors Associated with Physical Activity of Women Aged over 75 in South Korea". *Journal of Exercise Rehabilitation* 14.3 (2018): 387-393.

23. Van Landingham Scott W., *et al*. "Visual Field Loss and Accelerometer-Measured Physical Activity in the United States". *Ophthalmology* 119.12 (2012): 2486-2492.

24. Smith Lee., *et al*. "Physical Inactivity in Relation to Self-Rated Eyesight: Cross-Sectional Analysis from the English Longitudinal Study of Ageing". *BMJ Open Ophthalmology* 1.1 (2017): 1-5.

25. Aro Ayodeji A., *et al*. "Factors Influencing Regular Physical Exercise among the Elderly in Residential Care Facilities in a South African Health District". *African Journal of Primary Health Care and Family Medicine* 10.1 (2018).

26. American College of Sports Medicine. "Exercise Is Medicine®: The Importance of Connecting Fitness with Healthcare". (2017).

27. LaMorte Wayne. "The Theory of Planned Behavior". *Behavioral Change Models* (2018).

28. Buchan Duncan S., *et al*. "Physical Activity Behaviour: An Overview of Current and Emergent Theoretical Practices". *Journal of Obesity* (2012): 1-11.