PREVALENCE, TREND AND ASSOCIATED FACTORS OF PHYSICAL ACTIVITY AMONG PERSONS WITH SELECTED DISABILITIES IN AMAHRA REGIONAL STATE, 2018/2019, ETHIOPIA

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Received in Jun, 2022
Revised form Sep, to Oct, 2022
Accepted: Dec, 2022
Ethiopian Journal of Sport Science (EJSS),
Volume 3, Issue 2,
Published by Ethiopian Sport Academy

***Key words**: Prevalence, Trend, Disability, Physical activity, Amhara, Ethiopia*

EXECUTIVE SUMMARY

Introduction: *Physical inactivity is a global public health problem, and it has been linked to many of the most serious illnesses facing many nations. Despite lots of research that has been published in the field of exercise science over the past three decades, there remains a paucity of information on the prevalence, trend and determinant factors of regular physical activity in persons with disabilities.*

Objective: *To assess the prevalence and trend of physical activity and its associated factors among selected disabilities in Amhara regional state, 2018/2019, Ethiopia*

Methods: *Community based quantitative cross-sectional study design was conducted in Amhara regional state Ethiopia from December 15 to January 14, 2019. The study was included total of 5,250 (94.4% from the sample) persons with selected disabilities from Amhara regional state. The study participants were selected by using multi-stage sampling technique. Data was collected using different standard structured questionnaire. Multivariate logistic regression analysis was done to identify factors associated with regular physical activity. Finally, results were then presented with appropriate tables and graphs as well as Adjusted odds ratio (AOR) and 95% confidence interval.*

Results: - *The prevalence of adequate physical activity among persons with selected disabilities was 34.9% (95% confidence Interval 31.9, 37.9). Being deaf, acquired a disability, having high physical environment motivators, Motivation for physical activity, attitude, and Commitment to Physical Activity were found to be significantly associated with adequate physical activity.*

Conclusion: *- The prevalence of adequate physical activity among persons with selected disabilities in the Amhara regional state was low. Physical activity was higher among those with the disability of deaf, acquired disability, having high physical environment motivators, high motivation for physical activity, attitude, and Commitment to Physical Activity.*

Cited as: *Mr. Yohannes Andragachew & et al, (2022). Prevalence, Trend and Associated Factors of Physical Activity Among Persons With Selected Disabilities In Amahra Regional State, 2018/2019, Ethiopia.*

1. BACKGROUND: RELEVANCE AND THE STATE OF KNOWLEDGE

1.1 Background of the study

According to the 2011 World Health Organization report an estimated 650 million people with disabilities live in the world, of which 80% are from the developing countries where rehabilitation services are poor. In the same year, an estimated 17.6% of the population (around 15 million people) lives with disabilities in Ethiopia, of which 11.9%, 32.1%, 19.2 were with total blindness, physical disability and hearing problems respectively (WHO, 2011).

According to the International Labor Organization (ILO, 2003), people with disabilities are the largest invisible minority group in Ethiopia. In Ethiopia, some associate disability with spiritual evil and do not let disabled persons go out in public. This leads to families hiding disabled family members which leads to inaccurate information and statistics on disabilities(Department, 2002). The state of persons with disabilities in Ethiopia is even more tragic and severe due to the presence of diversified pre and post-natal disabling factors (like infectious diseases, difficulties contingent to delivery, under-nutrition, malnutrition, harmful cultural practices, lack of proper child care and management, civil war and periodic drought and famine) and the absence of early primary and secondary preventive actions(Department, 2002).

Historically, the physical activity needs of persons with disabilities have received little attention but recently have become a national agenda(J. Rimmer, Wolf, Armour, & Sinclair, 2008; J. H. Rimmer & Braddock, 2002; J. H. Rimmer, Braddock, & Pitetti, 1996).

Sub-Sahara Africa and other developing regions of the world are undergoing an epidemiologic transition (Omran, 2005) characterized by the rising prevalence of obesity, diabetes, and cardiovascular diseases (Mbanya et al., 1996; Sobngwi et al., 2004; Wild, Roglic, Green, Sicree, & King, 2004). This transition is closely associated with the adoption of urban-industrial lifestyles with large shifts in diet and physical activity patterns (Fezeu et al., 2005; Popkin & Gordon-Larsen, 2004; Sobngwi et al., 2004). Over the past few decades, the physical activity patterns in the developing regions of the world have been changing from labor-intensive lifestyles to more sedentary and less physically demanding activities.

Low levels of physical activity in people with disabilities appear to be an issue of global concern. For persons with disabilities, the ability to be physically active may be limited, increasing the risk for a sedentary lifestyle. Physical inactivity leads to deconditioning followed by even less physical activity, resulting in physical deterioration and increased difficulties in managing everyday activities. Furthermore, physical inactivity may lead to reduced societal interactions that ultimately

lead to a decreased quality of life(Dunstan, Howard, Healy, & Owen, 2012; Fernhall & Unnithan, 2002). Hence, it is important to increase physical activity and decrease sedentary time to ensure good present and future health for persons with disabilities.

2. Statement of the problem

Today, lack of physical activity is the fourth leading risk factor for global mortality(Kohl 3rd et al., 2012) and is one of the leading public health indicators(Morrato, Hill, Wyatt, Ghushchyan, & Sullivan, 2007). Physical activity is important for people's health and well-being and this applies to people with all disabilities, for whom there is increasing concern about many risk factors and its impact on health (Bhaumik, Watson, Thorp, Tyrer, & McGrother, 2008; Finlayson et al., 2009).

Substantial data exist on the benefits of physical activity in both primary and secondary prevention of disease. Consequently, it has been assumed that people with disabilities are motivated for physical activity for the health benefits(Kohl 3rd et al., 2012) while other studies emphasize the social benefits(Groff & Kleiber, 2001; Sherrill & Williams, 1996). The efficient strategy for comprehensively improving physical activity among disabilities requires evidence. Understanding the prevalence of PA, the trends of PA and associated factors for PA among persons with disability is important in planning appropriate interventions to prevent those problems. Despite the voluminous amount of research that has been published in the field of exercise science over the past three decades, there remains a paucity of information on the activity patterns and physiological responses to exercise in persons with disabilities. In an era when physical activity has grown to new heights in terms of its importance in promoting health and preventing disease, many questions about the magnitude of physical activity and its determinant factors with disabilities remain unanswered(J. H. Rimmer et al., 1996).

At the national level, the National Statistical Development Strategy of the Ethiopian Central Statistical Authority (CSA) acknowledges the need for maintaining a comprehensive data on persons with disabilities in the country (Ethiopian National Disability Action Network (ENDAN), 2010). Although most of the world's disabilities live in developing countries and may be at high risk for further complications, very little is known about the prevalence, trend and determinant factors of physical activity among those disabilities. According to investigators' best knowledge in Ethiopia, there is no previous study conducted in this discipline. Therefore, the aim of this study is the assessment of the prevalence and trend of physical activity and its associated factors among selected disabilities in Amhara regional state, 2018/2019, Ethiopia.

3. OBJECTIVES OF THE STUDY:

3.1 General Objective

To assess the prevalence and trend of physical activity and its associated factors among selected disabilities in Amhara regional state, 2018/2019, Ethiopia

3.2 Specific objectives

- Measure the prevalence of physical activity
- Examine the trend of physical activities
- Identify the factors that determine physical activity

4. METHODS, PROCEDURES, AND MATERIALS

4.1 Study design and period

A community based quantitative cross-sectional study design was employed from December 15, 2018, to January 14, 2018.

4.2 The study area

The study was conducted in Amhara regional state, Ethiopia. Amhara is one of the nine ethnic divisions of Ethiopia, containing the homeland of the Amhara people. Previously known as Region 3, its capital is Bahir Dar. Based on the 2007 census conducted by the Central Statistical Agency of Ethiopia (CSA), the Amhara Region has a population of 17,221,976 (Ethiopia, 2008). According to Tirussew (2005), there are 17.6% of people with disabilities in Ethiopia, although the World Health Organization (WHO) estimates the number to be much greater. According to the CSA report of Ethiopia, in the case of the Amhara region, 198,694 disabled persons are found (Ethiopia, 2008).

4.3 POPULATION OF THE STUDY

Target population: All individuals with those selected disability in Amhara regional state, Ethiopia

Sample population: All individuals with those selected disability in selected *kebeles of* Amhara regional state, Ethiopia

Subject of the study: All individuals with those selected disability in selected *kebeles of* Amhara regional state, Ethiopia and selected to be included in this study

4.4 INCLUSION AND EXCLUSION CRITERIA

4.4.1 Inclusion criteria

Those individuals being deaf, blind or physically disabled aged above 5 years.

4.4.2 Exclusion criteria

Once sampling was completed and if an entire selected Woreda is determined to not be accessible or if the survey is unexpectedly found to be not feasible in that Woreda (e.g due to natural disasters, epidemics, etc) another Woreda from the same Zone was selected to replace the first one.

Similarly, if the selected Kebele was not accessible or if the survey was not feasible for major unexpected reasons another Kebele from the same Woreda was selected to replace the first one.

Those seriously ill and due to this illness cannot respond to questionnaires that were excluded in the present study.

4.5 SAMPLE SIZE DETERMINATION AND SAMPLING PROCEDURE

4.5.1 Sample size determination

The sample size is determined for each theme because the physical activity depends on the

type of disability and age(de Hollander & Proper, 2018).

Due to the lack of previous studies conducted in these populations, estimating the required sample size for half of the themes becomes a problem. But when previous studies were not available, using a proportion of 50% is recommended to increase the sample size. So, the required sample size is determined for each theme by using Epi info statistical software version 7.

4.5.2 Sampling procedure

The study was included 5,561 persons with selected disabilities. Because of no comprehensive statistics about the number and location of persons with disabilities is available from the national or Amhara government agencies, it was impossible to use simple random sampling.

As a result, a multi-stage sampling technique was employed to select study participants. The total population of disabled persons in Amhara was 198,694. There are 11 Zones and 3 administrative cities in the Amhara region. Out of these five zones and/or administrative cities, which are clusters, were selected by simple random sampling. From those selected zones/cities 30% of each woreda (24 woredas) and kebeles was selected by using simple random sampling (*Kebele* is the lowest administrative unit in the Amhara region).

The calculated sample size was distributed to each of the selected *Kebele* proportional to their population. The sampling frame was prepared for each *Kebele* after identifying disabled individuals through rapid registration by using house- to- house visits. The sampling interval was determined by dividing the total population of disabled individuals in each *Kebele* to the size of the sample required from that *Kebele*. Then, study participants were selected using a systematic random sampling technique from the sampling frame prepared.

4.6 VARIABLES OF THE STUDY

4.6.1 Dependent variable: -physical activity

4.6.2 Independent variables: -

Demographic and biological determinants: - (Age, gender, ethnicity, residential area, educational status, marital status, employment status, and household income)

Psychological determinants: - (Motivation for physical activity, attitude, Commitment to Physical Activity, Self-Compassion, Self-Regulation)

Social determinants: - (parental physical activity, presence of social support)

Environmental determinants: - (Open space, Access to facilities, Adapted facilities, perception of physical environment motivators)

4.6.3 TOOLS AND COLLECTION OF DATA Data collection tools

Several instruments were used for taking accurate measurements on physical activity, environmental factors, social factors, and personal factors. The use of proper equipment is the most essential for assuring internal validity. Data collection was involved in applying a questionnaire organized in sections to all the individuals comprising the sample. The questionnaire contained questions on **(A) Demographic determinants:** was used to collect socio-demographic information on age, gender (male; female), ethnicity (Amhara, Oromo, Tigirie, Ethio Somali, Afar, SNNP and others), residential area or locality (urban; rural), educational background (no formal education; primary; secondary; tertiary), marital status (single; married; widow/widower/divorcee), employment status (government/semi-government; private; self-employed; homemaker; retiree), and household income.

(B) Physical activity: Prevalence, our main outcome variable, and the trend of Physical activity were assessed by using the short version of the International Physical Activity Questionnaire (IPAQ). IPAQ is a reliable and valid tool to obtain comparable estimates of physical activity, based on activity undertaken across multiple domains including leisure, domestic, work, and transport (Hagströmer, Oja, & Sjöström, 2006; Papathanasiou et al., 2009).

(C)Environmental determinants: The respondents were asked whether there are sufficient green spaces in their neighbourhood; noise from outdoors annoys them, and the quality of their neighbourhood environment. Barriers and motivators of the physical environment for physical activity were measured by standard instruments. Rimmer et al. (2000) developed a measure of barriers to exercise, which contained some environmental factors for persons with a disability.

Perception of physical environment motivators measurement scale was the other standard instrument used in environmental determinants. This variable was recoded into three categories: high-, medium- and low levels of physical environment motivators (Chaudhury, Campo, Michael, & Mahmood, 2016).

(D) Psychological determinants: In this part of the questionnaire there were five subparts.

1. The motivation for physical activity: was measured by the Exercise Self-Regulation Questionnaire (SRQ-E) (Ryan & Connell, 1989) that assesses domain-specific types of motivation regulation (external, introjected, identified, and intrinsic).

***2. Attitudes*:** As suggested by Ajzen participants were completed five statements using the stem: "For me to exercise for at least 30 minutes each day in the forthcoming month is". Two questions assessed affective attitudes: pleasant–unpleasant, and enjoyable–unenjoyable. Three questions were assessing instrumental attitudes: good-bad, worthless–valuable, and harmful–beneficial. All were rated on a seven-point scale. Items were reverse-scored where appropriate so that a higher score will indicate a more positive attitude (Ajzen, 2002).

3. Commitment to Physical Activity Scale (CPA): The CPA is a 12- item questionnaire that measures an individual's commitment to physical activity. Higher scores indicated more commitment to physical activity; lower scores reflect the lower commitment to physical activity(Corbin, Nielsen, Borsdorf, & Laurie, 1987).

4. Self-Compassion Scale (SCS): The SCS is a 26-item self-report measure consisting of six subscales. The six subscales represent three theoretical continua: self-kindness vs. self-judgment, common humanity vs. isolation, and mindfulness vs. over-identification(Neff, 2003).

5. Short Version of the Self-Regulation Questionnaire (SSRQ): The SSRQ is a 31-item measure of people's generalized ability to regulate goal-directed behavior. Participants rate each item using 5-point Likert-type (Carey, Neal, & Collins, 2004).

E. Behavioral determinants: in this part of the questionnaire study participants were asked about their history of substance use (Smoking (Yes/No), taking alcohol (Yes/No)).

4.6.4 Data Collection procedure

Different data collection methods were employed in the proposed study. For most themes, the independent variables data were collected by interviewer-administered questionnaires (Demographic and biological determinants (except BMI, which is measured by weight and height scale), Personal determinants, Social determinants, Behavioral determinants, and Environmental determinants). In the case of deaf study participants' data collectors with the capability of sign language were used. To measure the dependent variable which is physical activity IPAQ was used.

30 supervisor who had a first degree in sport science and 98 data collectors for rapid registration (two data collectors for each woredas) and additional 98 data collectors, which is 196 (four data collectors for each woredas) who are special need diploma holders was recruited and trained intensively for 3 days on interview techniques, sampling procedure, inclusion and exclusion criteria, sources and reduction of errors before the actual data collection period and used for the data collection.

4.7 OPERATIONAL DEFINITIONS

Moderate-intense activities are operationalized as activities with a MET-value of 3.0–5.9. Vigorous-intense activities are operationalized as activities with a MET-value of ≥6.0 (Organization, 2010).

4.8 DATA MANAGEMENT AND ANALYSIS PROCEDURE

Data were checked, entered and cleaned using Epi-info version 7 statistical software and then transferred to SPSS (Statistical Package for Social Science) version 20 for analysis. Descriptive statistics of the collected data was done for most variables in the study using statistical measurements. Cross tabulation, frequency tables, chart, graph, texts, percentages, the mean and standard deviation were used to describe the data. The prevalence

of physical activity was reported as percentages. All independent variables were fitted to multivariate logistic regression for controlling the possible effect of confounders and finally, the variables which have significant association were identified based on Adjusted Odds Ratio (AOR), with 95% CI and 0.05 p-values. The method was backward logistic regression and variables having a p-value of less than 0.05 were considered as significantly associated with the dependent variable. The fit of the model was also assessed by using the Hosmer-Leme show goodness-of-fit test.

5. ETHICAL CONSIDERATIONS:

Before data collection, ethical approval was obtained from the ethical review committee of the University of Gondar. Official permission letter was obtained from the Amhara region Bureau of Labor and Social affairs. Permission letters from respected zonal and woredas administrative offices were also obtained. Letters also were prepared for the local authority of the selected kebeles.

The purposes and the importance of the study were explained at all levels and written was secured from each adult study participants after explaining the purpose of the study. In the case of children, parent/guardian consent and child assent were obtained before data collection. All study participants were assured that the data did not have any negative repercussions on many aspects of their life. The study participants can withdraw at any time and/or refrain from responding to questions. Participants were also informed that all the data obtained from them would be kept confidential using codes instead of any personal identifiers.

6. RESULTS

The study included 5,561 *persons with selected disabilities*, among these 296 were refuse to participate in the study. Fifteen questionnaires found incomplete and excluded from the analysis.

A sample of 5,250 (94.4% from the sample) *persons with selected disabilities* from Amhara regional state was filled the questionnaires. The mean reported age of the respondents was 24.8 (S.D $\pm$ 6.5). The majority of the respondents were Orthodox Christians (61%), followed by Muslims (22%) and protestant (10.9%). In terms of educational status about one-third of the respondents had secondary education (33.67%) and about a quarter of them (24.2% and 28.28 respectively) had no formal education and primary education.

Prevalence of physical activity

To answer our first objective, which was to look at the level of physical activity among persons with disabilities, we indicated the essential spellbinding parameters of all-out MET-minutes/week result accomplished in the IPAQ survey. As indicated by the outcomes acquired right now, in the general level of physical activity of individuals with persons with disabilities, communicated through MET-minutes/week, was low. If the outcomes acquired from the IPAQ are communicated in classifications as per the degree of physical activity of respondents, we found that around one-third of individuals with disabilities fall

into the classification of adequate level physical activity. This shows only a small amount of respondents' amount of physical activity is adequate for a solid way of life and effectively affects their wellbeing (Table 3).

Table 3: Level of physical activity among selected disability

Category	Frequency	percentage
Low level <600 met	3416	65.1
Moderate level 600-3000 met	1492	28.4
High level >3000 met	342	6.5
Overall	5250	100

To get data on the physical activity of individuals with disabilities, we gather data on sports activities, as introduced in (Table 4). In our investigation, just about a small 11.3% portion of the subjects were engaged with sports activities. Among those participated in sports activities the greater part of the subjects were associated with recreational games exercises and just a modest number in serious games.

Table 4: Percentage of inclusion in sport activity

Inclusion in sport activity	N	**Percentage**
Included	593	11.3
Not included	4657	88.7
The level of inclusion in sport activity	**N**	Percentage
Recreational	483	81.5
Competitive	110	18.5

Factors associated with adequate physical activity

Table 4 provides the adjusted OR and 95% CI that quantifies the association between the independent variables and the outcome variable (adequate physical activity). These estimates were obtained using the multivariable logistic regression analysis.

Among the socio-demographic variables, age, educational level, and disability type were statistically associated with adequate physical activity. The age group of <18 respondents were about almost three times more likely to practice an adequate level of physical activity than the age group of 75 and above (AOR= 2.814, 95% CI: 1.221-6.483). Respondents having no formal education (AOR= 0.469, 95% CI: 0.256-0.086), primary education

(AOR=0.420, 95% CI: 0.249-0.709) and secondary school (AOR=0.438, 95% CI: 0.261-0.733) were 53.1%, 58% and 56.2% less likely to practice adequate level of physical activity as compared to respondents having college and above educational status respectively. Respondents with acquired disability type were 1.76 times more likely to have adequate physical activity than those who are with congenital disability (AOR = 1.761, 95% CI: 1.251-3.334). And also, the other disability type which classifies disability with a blind, deaf and physical disability was showed a statistically significant association with adequate physical activity level. Being deaf was positively associated with adequate physical activity levels. Those deaf respondents were 2.77 times () more likely to practice adequate physical activity levels as compared to an individual with physical activity disabilities.

Environmental factors conducted in the study were found to be statistically associated with adequate physical activity levels. In particular, for every score increase in access to facilities for physical activity, the odds of being adequate physical activity performer was multiplied by 1.89 (AOR= 1.89, 95% CI: 1.237,2.03). And also, for adapted facilities after adjusting all variables, the odds of having adequate physical activity levels were increased by 172% (AOR= 2725, 95% CI: 1.629,3.825) for every score increase to the questionnaire of adapted facilities.

The only psychological variable that showed statistically significant association with the dependent variable was the commitment to physical activity. For every increase score in commitment to physical activity scores the odds of having adequate physical activity levels were increased by 20% (AOR=1.199, 95% CI: 1.009,1.487). The other variables were removed in the iteration process of the backward logistic regression method.

Table 6- Multivariate logistic regression analysis for potential factors associated with an adequate level of physical activity among selected disability in Amhara region, Ethiopia

Variables	Physical activity		Crude OR (95%CI)	Adjusted OR (95%CI)
	Adequate	Inadequate		
Age				
<18	469	1146	0.665(0.34-1.3)	**1.632(1.233-3.725)***
18-44	981	1119	1.424(0.741-2.737)	**2.814(1.22-6.483)***
45-64	181	869	0.339(0.164-0.699)	0.694(0.299-1.613)
65-74	117	144	1.324(0.572-3.065)	1.328(.530-3.326)
75 and above	85	139	1	1
Educational status				

No formal education	513	758	0.568 (0.372-0.867)	0.469(0.256-1.086)
Primary education	481	1004	0.402(0.265-0.611)	0.420(0.249-1.71)
Secondary education	443	1325	0.281(0.185-0.427)	0.438(0.26-1.733)
College and above	390	336	1	1
Disability type$_a$				
Congenital	1061	2292	1	1
Acquired	773	1124	1.485(1.133-1.945)	**1.761(1.251-3.334)** **
Disability type$_b$				
Deaf	650	866	2.441(1.594-3.738)	**2.767(1.64-4.66)** **
Blind	669	1407	1.547(1.014-2.358)	1.465(0.887-2.420)
physical disabilities	390	1268	1	1
Access to facilities			1.012(0.899,1.659)	**1.89(1.237,2.03)****
Adapted facilities			1.548(1.256,2.465)	**2.725(1.629,3.825)****
Commitment to Physical activity			1.712(1.023,1.628)	**1.199(1.009,1.487)***

Note: 1= Reference **, =p<0.001, * =p<0.05

7. Discussion

The general objective of the present study was to assess the prevalence and trend of physical activity and its associated factors among selected disabilities in the Amhara regional state. Disabled individuals are vulnerable to much higher health risks related to their sedentary lifestyle than individuals without disabilities.

Physical activity is one of the main instigators of the rising problem of noncommunicable diseases (NCDs) globally {Van der Sande, 2003 #25}. Based on this observation the World Health Organization (WHO) has put forward physical activity (PA) recommendations necessary for maintaining good health and for the prevention of diseases. In the present study, we examined PA using the IPAQ and report PA levels and associated determinants.

The result revealed that the mean score of physical activity was 1093 MET-minute per week. In the present study, physically active participants were identified as those reporting adequate and not adequate levels of physical activity according to the International Physical Activity Questionnaire {Craig, 2003 #24} which is in line with international standards and represents meeting the latest recommended physical activity guidelines of 150 minutes of moderate-intensity activity weekly {Statistics, 2009 #23}. Of the 5250 participants included at baseline, this study revealed that about 36% of persons with disabilities in the Amhara region meet the WHO recommendations for physical activity.

Globally millions of peoples have a disability. These are peoples with serious difficulty walking or climbing stairs; hearing; seeing; or concentrating, remembering, or making decisions. Individuals with disabilities are three times more likely to have heart disease, stroke, diabetes, or cancer than adults without disabilities. Aerobic physical activity can help reduce the impact of these chronic diseases, yet nearly half of all adults with disabilities get no leisure-time aerobic physical activity.

The result of the present study is comparable with studies from different parts of the world. A few studies have detailed physical activity levels, yet just a couple of them are precise with regards to the depiction of the activity level. Among the demonstrative traverse examines, Ellis et al. (2007) detailed that among 223 grown-ups (M_age = 45.4 years, SD = 10.8) who finished an electronic review, the normal all-out physical activity score was 20.5 metabolic equal (METS)- hours/day (SD = 16.8). This compares roughly to five hours per week with broad strolling or quick wheeling (IPAQ Research Committee, 2005). Further, Santaigo and Coyle (2004) announced relaxation time physical activity participation to be 2.9 occasions (± 5.12) every week in 170 ladies with a physical disability, with 39.4% detailing no cooperation by any stretch of the imagination. In an investigation among Afro-American ladies with physical handicaps (N = 50) Rimmer, Rubin, Braddock, and Hedman (1999) uncovered low degrees of recreation time physical movement. Just 8.2% of the example took an interest in recreation time physical activity, and just 10% occupied with a high-impact practice at least three days out of every week for in any event 15 min. Unstructured physical action (e.g., business-related action, housework, cultivating, shopping) was about missing. In an investigation among 4,038 grown-ups with disabilities, Boslaugh and Andresen (2006) presumed that most of the grown-ups with an incapacity didn't meet essential suggestions for physical movement. The suggestion of the CDC and ACSM for moderate physical action was utilized: moderate exercise for in any event 30 minutes on at least 5 days out of each week in fragments of in any event 10 minutes each was viewed as adequately dynamic. Members were delegated dichotomously as meeting this proposal or not. Among the investigations on cerebral paralysis (CP), van der Slot et al. (2007) inferred that the degrees of ordinary physical activity and network investment, estimated by a movement screen in grown-ups with CP, were practically identical to levels in healthy. Different examinations incorporating people with CP have announced very low degrees of movement. Jahnsen et al. (2003) announced that among 403 adults with CP, 46% were routinely truly dynamic, characterized as at least 1 hour seven days. In their subjective investigation among 22 people matured 35-68 years, Sandstrom, Samuelsson, and Oberg (2009) exhibited a low movement level among the talked with members. A few examinations included people with Spinal Cord Injury. In a gathering of 985 people with Spinal Cord Injury, simply over half (52.1 %, n = 501) of

members occupied with no physical exercises every week (Tasiemski, Kennedy, Gardner, and Blaikley, 2004). They had no measure for all-out physical action. Van lair Berg-Emons et al. (2008) revealed a low action level contrasted with physically fit in a gathering (N =16) of people with Spinal Cord Injury, one year after in-understanding recovery. The action level was estimated by a movement screen. They determined that the length of normal unique exercises was 49 minutes out of every day in the Spinal Cord Injury gathering. This was fundamentally lower than the mean span of dynamic exercises among capable (143 min. every day). The distinction may be clarified by the distinction in the examination populace, test choice, the estimation period, and the strategies, specifically, can impact study results. This shows that a low level of physical activity is a global problem including developing countries. These could be due to, even if many peoples may think that peoples as a whole (including individuals with a disability) from developing countries do not have a car and other supporting materials that will contribute to physical activity, although privately owned cars are relatively scarce in these countries, other forms of motorized travel are routinely used by a large proportion of inhabitants.

This is the first community-based study, to the investigators' knowledge, identifying the associated factors of adequate physical activity level in Amhara regional state among individuals with selected disabilities. Even if there is growing research interest in physical activity, little information has been available about the associated factors among disabled individuals. This study tried to see the association between socio-demographic factors and the adequate level of physical activity. Among those variables age group of <18, 18-44 was significantly associated with an adequate level of physical activity. This finding is consistent with other studies (Boslaugh & Andresen, 2006; Finch, Owen, & Price, 2001; Motl, Snook, McAuley, Scott, & Hinkle, 2007; Warms, Belza, & Whitney, 2007). This may be due to increasing age may also indicate a reduced level of physical function. Because, the biological and physiological changes of aging are primarily associated with a decline in muscle mass ranging from 1% to 2% per year past the age of 50, strength, endurance, and the inability to maintain balance (Sakuma K, Yamaguchi A.,2012).

Evidence suggests that the majority of youth and adults in low-income countries fail to meet current physical activity guidelines. In sub-Saharan Africa, higher socioeconomic status and living in an urban area were associated with greater engagement in sedentary behaviors (including screen time) among children and youth. Even more surprising are the relatively low rates of active transportation to and from school observed in population-based samples of youth in many low-income countries in Africa. This suggests that although privately owned cars are relatively scarce in these countries, other forms of motorized travel are routinely used by a large proportion of inhabitants. (Hallal et al. 2012)

In terms of disability type, the result of the present study showed that adequate physical activity level was determined by the type of disability. In this study, the disability type was classified based on two domains. The first classification categorizes disability into deaf, blind and physical activity. From this classification, deaf individuals were positively associated as compared to individuals with a physical disability. This result is in line with different research around the world (Longmuir & Bar-Or, 2000, Goodman and Hopper, 1992, Dummer, Haubenstricker, and Stewart, 1996, Ellis, Lieberman, Fittipauldi-Wert, and Dummer, 2005,). These could be due to that the psychomotor behaviors of individuals with hearing impairments are more similar to, than different from, their peers without hearing impairment (Goodman & Hopper, 1992).

The second type of disability classification is acquired and congenital. This type of classification also showed statistically significant association with an adequate level of physical activity. The adequate level of physical activity was higher among individuals with an acquired disability as compared to individuals with a congenital disability. This could be explained by those with an acquired disability often have experience in sport or physical activity before acquiring their disability (Sherrill & Williams, 1996). For those with congenital disabilities, it may be a question of overprotection by parents (Grue, 1998). Both may explain the higher physical activity level among persons with acquired disabilities.

Environmental factors, which are physical environment motivators, such as access to the facility and adapted facilities showed a statistically significant association with an adequate level of physical activity. Disabled individuals with a higher score of access to facilities were associated with an adequate level of physical activity. Yet, emerging research indicates that access to fitness and recreation facilities is still a major barrier to physical activity for persons with disabilities. In the case of adapted facilities similar to access to facilities, it is positively associated with an adequate level of physical activity. This could be due to most manufacturers of exercise equipment do not consider in their design specifications on how to make their equipment accessible for people with physical, cognitive, and sensory disabilities. Inaccessible equipment is a major problem in terms of participation in fitness-enhancing activities for people with disabilities.

The last variable that showed a statistically significant association was a commitment to physical activity, which is one of the psychological factors tested in this research. The result indicated that higher levels of commitment to physical activity positively associated with an adequate level of physical activity. This could be explained by the physiological and psychological benefits of regular engagement in physical activity that are overwhelming and well-established in the literature. Higher levels of exercise and health-related physical activities are generally associated with some aspect of good physical

and psychological health, disease prevention, and longevity of life (Desai, Miller, Staples, & Bravender, 2008; Mack et al., 2012).

8. CONCLUSION

The prevalence of adequate physical activity among persons with selected disabilities in the Amhara regional state was low. Physical activity was higher among those age groups of <18 and 18-44, individuals with the disability of deaf, acquired disability, having high physical environment motivators, high motivation for physical activity, and Commitment to Physical Activity.

9. RECOMMENDATIONS

- To maximize the positive effect of physical activity on people with disabilities, there is a need to initiate appropriate techniques used to participate in physical activity for this population. The findings highlight a crucial need to Increase Physical Activity in an individual with a disability.
- Results of the present study indicate that physical activity promotion programs for those with a congenital disability may especially need support to perform and maintain PA.
- Further investigations in the region of physical activity among Ethiopian disabled individuals should be directed because one investigation alone is deficient to investigate the complexities of the point. In particular, this investigation ought to be recreated with a few upgrades and extensions.
- To motivate individuals with a disability, forging an identity as an exerciser and increasing commitment to physical activity is the psychological strategy that has the potential to have the greatest impact.
- Disability type and environmental factors also played a role. To increase the level of adequate physical activity of individual with disability it is better to have a better access to facilities and adapted facilities.
- Special attention is required for those individuals with physical disability when some one design and implement a project or a program that aimed to increase the level of physical activity.

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