

# Knowledge of the physical activity guidelines and factors associated with physical activity participation among adults in Harar town, eastern Ethiopia

Chalchisa Abdeta,<sup>1</sup> Berhanu Seyoum,<sup>2</sup> Zelalem Teklemariam<sup>2</sup>

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## ABSTRACT

**Objectives** We assessed knowledge of the physical activity guidelines and factors associated with physical activity participation among adults in Harar town, eastern Ethiopia.

**Design** A cross-sectional study of 590 adults in Harar town with face-to-face interview.

**Results** Only 27% of participants had good knowledge of the physical activity guidelines. The extent of physical activity participation was 54% (95% CI 50.0% to 58.4%). Male participants (adjusted OR (AOR) 2.14; 95% CI 1.49 to 3.07), educational status of college diploma and above (AOR 2.06; 95% CI 1.09 to 3.89), sitting less than 2 hours per day (AOR 1.82; 95% CI: 1.17% to 2.83%) and good knowledge of physical activity (AOR 3.03; 95% CI 1.98 to 4.64) were associated with physical activity participation.

**Conclusions** There is limited knowledge of physical activity guideline in the study area.

## BACKGROUND

The WHO recommends that adults achieve a minimum of 150 min moderate or 75 min vigorous intensity aerobic activity per week. Adults who do not succeed this guideline are considered as physically inactive.<sup>1 2</sup> Evidence indicated that physical inactivity is become the major problem of world's population including Ethiopia.<sup>3</sup> Study showed that physical inactivity contributed 5.2% of all deaths in Ethiopia by 2012.<sup>4</sup>

The knowledge of physical activity guidelines is limited in various countries—there is poor knowledge of physical activity in the UK (18%), England (15%) and India (9.3%).<sup>5–7</sup> Another study conducted in UK revealed that almost half (53%) of adults had good knowledge of physical activity guide.<sup>8</sup> However, there were no available data to know how many adults have a good knowledge of physical activity minimum requirements.

On the other hand, the magnitude of physical activity participation was reported from China (43.8%), Malaysia (56.3%), Nigeria (68.6%) and Ethiopia (81.1%).<sup>9–11</sup> Evidence

## What are the new findings?

- Knowledge of physical activity guideline is very low in the study area.
- Physical activity participation was largely below the guideline level.
- Factors such as sex, educational status, sitting time and knowledge of physical activity guideline were linked with physical activity participation.
- Having a good knowledge of physical activity can boost level of physical activity participation.

shown that different factors were associated with attaining physical activity guideline. For instance, sociodemographic factor (sex, age, educational status, occupation and income) and other factors like knowledge of physical activity guideline, satisfaction with current level of physical activity, future intentions to engage in physical activity and sitting time in day were associated with physical activity participation.<sup>5–29</sup> There has been limited study on knowledge of physical activity guideline and its participation in Ethiopia. Therefore, this study had three aims: (1) to examine knowledge of physical activity guideline, (2) to determine level of physical activity participation and (3) to identify factors associated with physical activity participation among adults in Harar town, eastern Ethiopia.

## METHODS

### Study protocol

This cross-sectional study was conducted on April 2016 among randomly selected 590 adults in Harar town, eastern Ethiopia. The sample size was determined using Epi Info V.7.0 of StatCalc programme. Then, data was obtained from previous study conducted in Nigeria to run this programme. This was assumed as similar setting with the study area. Accordingly, 73.6% of physical activity proportion among low income and 60.0% among high income were taken with adjusted



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<sup>1</sup>Department of Physiotherapy, Hiwot Fana Specialized University Hospital, Haramaya University, Harar, Ethiopia

<sup>2</sup>Department of Medical Laboratory Technology, College of Health and Medical Sciences, Haramaya University, Harar, Ethiopia

### Correspondence to

Chalchisa Abdeta; [caaliphysio@gmail.com](mailto:caaliphysio@gmail.com)

OR (AOR) of 0.54.<sup>11</sup> Assumptions of 90% power, 95% CI and 1:1 ratio of the two populations and 10% of non-response rate were used during this calculation. Lastly, the required sample size become 590.

Study participants were selected using multistage sampling techniques. Initially, 6 kebeles were selected from the total 19 kebeles using lottery method. The sample size was allocated based on the size of adult populations in selected area. Then, households were selected from each selected kebeles using systematic random sampling technique. Lastly, maximum of two adults were interviewed in a single household to maintain randomness. Lottery method was used if there were more than two adults in a single household.

### Data collection

A face-to-face interview was made to collect the data. Eight data collectors were recruited those have Diploma in Nursing. Similarly, two supervisors were also assigned those have Bachelor degree in Health officer. Two days training was given on data collection methods and tools for both data collectors and supervisors. Global physical activity questionnaire (GPAQ) V.2.0 was used to collect the data. At the same time, GPAQ generic show cards were used to clarify questions related to physical activity practice.<sup>30</sup> Lastly, participants were asked whether or not they were aware of the existence of the WHO physical activity guideline for adults and how much physical activity those guidelines recommended.

### Data quality control

In this study, data quality was maintained at different stages. Initially, questionnaire was translated into local language by experts to suit the local conditions. To keep consistency, it was translated back into English language. Then, data collectors and supervisors were trained. Afterwards, questionnaire was pretested on 5% of the total sample size out of the study area. Progressively, close supervision was made by supervisors throughout the data collection period. Lastly, double data entry was made to avoid possible errors.

### Statistical analysis

Data were entered into EpiData V.3.02. Then, exported and analysed using SPSS V.20. Statistical analysis was performed for descriptive statistics, bivariate and multivariate logistic regression analysis. Binary logistic regression analyses were done to identify factors associated with physical activity practice. During bivariate analysis, variables with *p* value less than 0.3 were selected for multivariate analysis to control confounding factors and identify significant factors. Statistical significance was considered at 95% CI with *p* value less than 0.05.

Physical activity practice was measured by metabolic equivalents (METs)-minutes per week. It was calculated by adding the products of corresponding METs value with the number of days and time spent in a typical week for the three domains of physical activity.<sup>30</sup> Participants

scored more than 600 METs-minutes per week were considered as having a good practice of physical activity. Besides, participants were asked whether or not aware for the WHO physical activity guideline for adults.

## RESULTS

### Study participants

A total of 562 adults were included in this study with the response rate of 95.3%. Participants mean age was 32.0 years with ( $\pm 12.2$ ) SD. The majority of participants were females (56.4%), 18–30 years old (61.0%), married (62.6%), primary and secondary school level (37.5%), privately employed (48.9%), earned from 1000 to 3000 Ethiopian Birr (ETB) (41.1%), satisfied with current physical activity level (80.2%), had intentions to engage in physical activity in a near future (78.5%) and sit more than 2 hours in a day (77.8%) (table 1).

### Knowledge of physical activity guideline and its level of participation

Among the study participants, only 27% of adults had good knowledge of physical activity guideline (table 1). The magnitude of physical activity participation was 54%, higher among the study participants of males (52.1%), age group from 18 to 30 years (61.0%), educational status of primary and secondary school (38.4%), sitting greater than 2 hours per day (72.8%) and poor knowledge of physical activity guideline (62.6%) than others (table 2).

### Factors associated with physical activity participation

Variables such as sex, age, educational status, sitting time and knowledge of physical activity guideline were showed an association with physical activity participation in bivariate analysis. However, variable age was not significantly associated with physical activity participation in multivariate analysis. Male participants were more than two times more likely to practice physical activity than females (AOR 2.14; 95% CI 1.49 to 3.07). Likewise, adults with educational status of college diploma and above more than two times more likely to take part in physical activity participation than those not read and write (AOR 2.06; 95% CI 1.09 to 3.89). Participants with sitting less than 2 hours per day were nearly two times more likely to engage in physical activity participation than their counterparts (AOR 1.82; 95% CI 1.17% to 2.83%). Moreover, adults those had good knowledge of physical activity were three times more likely to practice physical activity than those do not have it (AOR 3.03; 95% CI 1.98 to 4.64) (table 2).

Additional supplementary material can be availed at online supplementary file 1.

## DISCUSSION

### Knowledge of the guidelines

The knowledge of the physical activity guidelines among Ethiopian adults was very low. This result was comparable with study finding of 32% from Nigeria.<sup>11</sup> However, it was lower than another study report of 63% in Nigeria<sup>17</sup> and of 66% in Brazil.<sup>18</sup> Unlikely, higher results of 9% from

**Table 1** Characteristics of the study participants among adults in Harar town, eastern Ethiopia, April 2016 (n=562)

Variable	Characteristics	Frequency (%)
Sex	Male	245 (43.6%)
	Female	317 (56.4%)
Age groups (years)	18–30	343 (61.0%)
	31–40	109 (19.4%)
	41–50	43 (7.7%)
	51–64	67 (11.9%)
Marital status	Single	186 (33.1%)
	Married	352 (62.6%)
	Divorced	9 (1.6%)
	Separated	13 (2.3%)
	Windowed	2 (0.4%)
Educational status	Not write and read	61 (10.9%)
	Write and read only	129 (23.0%)
	Primary school and above	211 (37.5%)
	College diploma and above	161 (28.6%)
Occupation	Unemployed	102 (18.1%)
	Government employed	161 (28.6%)
	Private employed	275 (48.9%)
	NGO employed	24 (4.4%)
Monthly income (ETB)	<1000	188 (33.4%)
	1000–3000	231 (41.1%)
	3001–5000	65 (11.6%)
	>5000	78 (13.9%)
Satisfaction with current level of PA	Not satisfied	111 (19.8%)
	Satisfied	451 (80.2%)
Intentions to participate in PA in a near future	No intentions	121 (21.5%)
	Have intentions	441 (78.5%)
Sitting time in a day	≤2 hours	125 (22.2%)
	>2 hours	437 (77.8%)
Knowledge of PA guideline	Poor	409 (72.8%)
	Good	153 (27.2%)

ETB, Ethiopian Birr; NGO, non-governmental organisation; PA, physical activity.

India<sup>8</sup> and 15% from England were reported.<sup>19</sup> The possible reason for this variation might be as a result of unequal information disseminations about physical activity across the countries. In Ethiopia, information is limited on spreading of physical activity guideline.

Our study also revealed that the level of physical activity participation among adults was low—only about half (54%) of the study participants attained the recommended level. It was similar with study carried out in Malaysia (56%).<sup>9</sup> The similarity might be due to a rise of physical inactivity across the countries.<sup>19</sup> However, it was higher than 39.9% of study findings from Pakistan,<sup>13</sup> 40.0% from Nigeria<sup>20</sup> and 45.6% from India.<sup>21</sup> But, it was lower than study results of 86% in Kenya,<sup>22</sup> 81% in Nigeria,<sup>19</sup> 81% in Mexico<sup>18</sup> and 68% in Poland.<sup>12</sup> The

reason might be due to setting, study period and lifestyle differences.<sup>10 19 23</sup>

### What influences people to participate in physical activity?

The participation of physical activity among adults can be affected by different factors. This study identified that male adults were more likely to practice physical activity than females. Similar findings were reported from study conducted in Brazil,<sup>24</sup> Malaysia,<sup>10</sup> China,<sup>9</sup> Kingdom of Saudi Arabia,<sup>15</sup> India,<sup>22</sup> South Africa<sup>25</sup> and Nigeria.<sup>20</sup> The reason might be due to male participations in heavy work that makes them to be active as compared with females.<sup>10 15 20 24</sup> Likewise, participants with educational status of college diploma and above were more likely to practice physical activity than those not read and write.

**Table 2** Factors associated with physical activity participation among adults in Harar town, eastern Ethiopia, April 2016 (n=562)

Characteristics	Physical activity participation		Adjusted OR (95% CI)	P value
	Active	Inactive		
<b>Sex</b>				
Male	159 (52.1%)	86 (33.5%)	2.14 (1.49 to 3.07)	0.000*
Female	146 (47.9%)	171 (66.5%)	1	
<b>Age group (years)</b>				
18–30	186 (61.0%)	157 (61.1%)	1.17 (0.67 to 2.05)	0.573
31–40	69 (22.6%)	40 (15.6%)	1.83 (0.95 to 3.55)	0.071
41–50	18 (5.9%)	25 (9.7%)	0.79 (0.36 to 1.78)	0.579
51–64	32 (10.5%)	35 (13.6%)	1	
<b>Educational status</b>				
Not write and read	25 (8.2%)	36 (14.0%)	1	
Write and read only	67 (22.0%)	62 (24.1%)	1.56 (0.81 to 2.99)	0.184
Primary school and above	117 (38.4%)	94 (36.6%)	1.65 (0.89 to 3.03)	0.107
College diploma and above	96 (31.5%)	65 (25.3%)	2.06 (1.09 to 3.89)	0.025*
<b>Sitting time in a day</b>				
≤2 hours	83 (27.2%)	42 (16.3%)	1	0.008*
>2 hours	222 (72.8%)	215 (83.7%)	1.82 (1.17 to 2.83)	
<b>Knowledge of physical activity guideline</b>				
Poor	191 (62.6%)	218 (84.8%)	1	0.000*
Good	114 (37.4%)	39 (15.2%)	3.03 (1.98 to 4.64)	

\*P value<0.05, statistically significant at 95% CI.

This result was similar to study findings in Brazil<sup>24</sup> and Lebanon.<sup>16</sup> The similarity might be due to previous experience with physical education course at schools. Participants who sat for fewer than 2 hours per day were more likely to practice physical activity than those sitting more than 2 hours per day. This result was similar with study done in South Africa<sup>26</sup> and Nigeria.<sup>27,28</sup> The reason is that participants sitting less can spend more time in active tasks that can assist them for physical activity practice. Adults those had good knowledge of physical activity guideline were more likely to take part in physical activity participation than their counterparts. This finding was comparable with study conducted in India,<sup>8</sup> Nigeria,<sup>21</sup> Brazil,<sup>18</sup> England<sup>5</sup> and China.<sup>12</sup> The reason might be due to previous exposure to physical activity information.

### Strength and limitations of the study

We used standard tools and analysis, some limitations should be considered as follows. First, this study used self-report method which is not strong as objectively measured study. Second, as this study used cross-sectional study design we cannot speak to any cause–effect relationship. Finally, the study was not compared with study conducted in Ethiopia due limited literatures in the country.

### CONCLUSION

This study revealed poor knowledge and low level of physical activity participation among adults in Harar town. This implies that there is a gap on knowledge of physical activity guideline and its level of participation in this part of Ethiopia. Male sex, higher educational status, less sitting time and superior knowledge of physical activity guideline were all positively associated with physical activity participation. Therefore, raising knowledge of physical activity is critical as a first step towards increasing the level of physical activity participation in the study area.

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to keep privacy. Instead of using the name of participants, code was used on questionnaire to maintain confidentiality.

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