

Knowledge, Attitude and Practice of Physical Activities among Nyarugenge District Workers, Kigali-Rwanda.

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Abstract

Background: Chronic conditions like diabetes, obesity, and other NCDs are closely linked to insufficient physical activity. In Rwanda, NCDs accounted for approximately 44% of all deaths in 2016, with an estimated 13% attributed to physical inactivity. This study sought to evaluate the level of knowledge, attitudes, and practices (KAP) related to physical activity among workers in the district of Nyarugenge, Kigali, Rwanda.

Methods: A cross-sectional study design was employed among workers in Nyarugenge District. Data were collected in September 2018 using a structured questionnaire to assess the knowledge of participants, their practices and attitudes regarding physical activity. About 206 participants were chosen by Yamane sample size formula. Ethical clearance was obtained from Mount Kenya University, and participants consented voluntarily to participate in the process. Data were analyzed using univariate, bivariate, and multivariate logistic regression at a significance level below 0.05.

Results: The findings revealed that 56.3% of participants demonstrated a high level of knowledge regarding physical activity, while 43.7% had low knowledge. Overall, 58.3% of respondents exhibited a positive attitude toward physical activity. However, more than half of the participants (57.3%) reported insufficient levels of physical activity practice. Multivariate analysis showed that three factors were significantly associated with sufficient physical activity: positive attitude (Adjusted Odds Ratio [AOR] = 5.455; 95% CI: 2.666–11.162; $p < 0.001$), high knowledge (AOR = 3.315; 95% CI: 1.639–6.703; $p = 0.001$), and age ≤ 35 years (AOR = 0.370; 95% CI: 0.184–0.747; $p = 0.006$).

Conclusion: The study concludes that knowledge, attitude, and younger age are significant determinants of sufficient physical activity among workers in Nyarugenge District. These results emphasize the necessity for strengthened workplace health promotion strategies and targeted advocacy involving policymakers, the Ministry of Health, and other key stakeholders to enhance physical activity practices to improve employees' well-being in the workplace.

Keywords: Physical activity, KAP, Non-communicable diseases, Workers

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INTRODUCTION

Physical activity is widely recognized as a cornerstone of good health and a key protective factor against non-communicable diseases (NCDs). Globally, physical inactivity is among the main risk factors for early mortality, contributing significantly to cardiovascular diseases, diabetes, cancers, and mental health disorders. Estimates from the World Health Organization (WHO, 2021) reveal that insufficient physical activity accounts for around 3.3 million deaths worldwide every year. Evidence indicates that adults who participate in regular physical activity have a 25–30% reduced risk of all-cause mortality compared to those who are inactive (Wasfy et al., 2022). Despite these benefits, global trends indicate persistently insufficient physical activities, mainly among working populations who spend long hours in sedentary occupations (Strain et al., 2024).

In developed countries, technological advancement, increased motorized transport, and sedentary work environments have significantly reduced daily physical activity levels. Studies indicate that 35% of adults in high-income countries do not comply with the physical activity guidelines recommended by the World Health Organization (WHO, 2024). Although knowledge of the health benefits associated with physical activity is relatively high, attitude–behavior gaps persist, especially among office workers and urban employees (Wasfy et al., 2022). The prolonged sitting time among workers is linked to obesity, hypertension, and metabolic disorders, highlighting the value of workplace-based physical activity promotion (WHO, 2024).

In LMICs, according to WHO (2024), nearly one-third of adults are physically inactive, with workers in formal employment being disproportionately affected. Limited access to recreational facilities, long working hours, and inadequate health promotion programs further constrain regular physical activity in these settings (Strain et al., 2024).

In Africa, the problem of NCDs has increased over the past two decades, partly due to reduced physical activity levels. The WHO (2024) stated that physical inactivity contributes significantly to the growing prevalence of hypertension, diabetes, and other NCDs across the continent. Urban African workers are particularly vulnerable due to sedentary jobs and limited opportunities for structured exercise (Dalal et al., 2021; Strain et al., 2024). Although awareness of physical activity benefits is improving, attitudes and practices remain suboptimal, especially among working adults in urban areas.

Rwanda is experiencing a steady rise in NCDs, with physical inactivity identified as a major modifiable risk factor. The WHO NCD Country Profile (2024) stated that NCDs account for over half of all deaths in Rwanda, with insufficient physical activity contributing significantly to this burden. According to the WHO STEPS Survey Rwanda 2022, a proportion of Rwandan adults do not meet recommended levels of physical activity (WHO, 2022). The Rwanda NCD Annual Report (2025) further highlights physical inactivity as a growing concern, particularly among urban workers, alongside unhealthy diets and sedentary lifestyles.

Data from the Ministry of Health Annual Health Statistics Report (2023) indicates increasing cases of hypertension and diabetes among adults of working age. Similarly, the Ministry of Health (2025) emphasized the need to strengthen preventive strategies, including promotion of physical activity, to curb the rising NCD burden. Based on the Ministry of Health annual report 2022–2023, workplace health promotion remains inadequate despite policy commitments to NCD prevention.

Nyarugenge District, located in Kigali City, is predominantly urban and hosts a large population of public and private sector workers. Urban living conditions, traffic congestion, and sedentary occupations limit opportunities for regular physical activity among workers.

Reports indicate increasing prevalence of NCD risk factors like being overweight, physical inactivity and stress among Kigali City residents (Ministry of Health Rwanda (2025); Ministry of Health Rwanda (2023). However, there is partial empirical evidence on the knowledge, attitudes, and practices of physical activity among workers in Nyarugenge District. This lack of localized data constrains the development of targeted workplace and community-based interventions. Therefore, this study seeks to evaluate the attitudes, knowledge and practices linked to physical activity among workers in Nyarugenge District, Kigali City, to inform effective strategies for reducing physical inactivity and NCD-related health risks.

The add value of this study to the science

This study:

- Provides Empirical Evidence by generating local evidence on the knowledge, attitudes, and practices related to physical activity and addressing a gap in the existing literature on workplace health and non-communicable disease prevention in Rwanda.
- Identifies key determinants of physical activity, with positive attitude, greater knowledge, and younger age linked to higher participation among workers.
- Provides Evidence for Workplace Health Promotion Policies and Interventions that promote physical activity, support healthy behaviors to prevent non-communicable diseases among working populations.

METHODS

Study Design

A cross-sectional analysis using a quantitative methodology was used to determine the KAP on physical activities. Data were collected through structured questionnaire administered to eligible staff. The study focused on key variables, including socio-demographic characteristics, behavioral factors, attitude and

knowledge, to categorize factors linked to adoption of physical activities in the study population.

Study Settings and Population

The population was composed of 352 workers employed at Nyarugenge District, according to the Annual Report 2018 and other official district sources. These workers have direct interaction with patients in their daily professional duties, including administrative staff, technical personnel, and support workers across various departments and service units within the district (Nyarugenge District, 2018).

Inclusion criteria

The inclusion criteria for the study respondents were being aged 18 years or older, engaging in or being capable of engaging in physical activity, and providing informed consent to participate in the study. Additionally, participants were required to demonstrate a willingness to comply with all study procedures.

Exclusion criteria

The exclusion criteria for the study respondents included individuals with medical conditions or physical disabilities that restricted their safe participation in physical activity. Participants who were currently ill, injured, or otherwise unable to complete the study requirements, such as responding to questionnaires or participating in activity sessions, were also excluded.

Sample Size and Sampling

In this study, the sample size (n) is calculated based on Taro Yamane formula for calculating sample size (Chinedu, 2024).

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{352}{1 + 352(0.05)^2} = 205.9 \simeq 206$$

Where n = sample size.

N= Population,

e = Error

The calculation gave 206 workers employed at Nyarugenge District as the sample size for this study.

Dependent and independent variable of this study

The dependent variable in this study is the practice of physical activity, measured using the total Metabolic Equivalent of Task (MET) minutes per week and categorized as sufficient physical activity (≥ 600 MET-minutes/week) or insufficient physical activity (< 600 MET-minutes/week) insufficient (Alqahtani et al., 2024). Physical activity practice is assessed in terms of the frequency, duration, and type of activities performed by workers. The main independent variables are knowledge and attitude toward physical activity. Knowledge includes workers' awareness of the benefits of physical activity, exposure to training, and prior experience with exercise, while attitude reflects their motivation, beliefs, interest, and perceptions regarding physical activity. Additional independent variables include socio-demographic characteristics, workplace environment, peer influence, and social support, which may facilitate or hinder participation in physical activity. Furthermore, district-level physical activity policies and awareness of local physical activity plans act as intervening variables that can influence the relationship between knowledge, attitude, associated factors, and workers' physical activity practices.

Study instruments.

This study used a questionnaire to collect data. It has three sections. Section A comprised questions on the Demographic information of respondents, Section B comprised questions on the Knowledge and attitude of respondents on physical activity practices, Section C

comprised questions on practice of physical activities.

Validity and reliability of the instrument

Based on the findings of Burns and Grove (2013), a questionnaire is considered reliable if it yields consistent results when used on multiple occasions. In this study, reliability was ensured by calculating the Cronbach's alpha coefficient. The Cronbach's alpha coefficient result was 0.7 and was considered reliable. This instrument was also piloted before embarking on data collection.

Burns and Grove (2013) define validity as the degree to which the study's findings accurately reflect reality, rather than being influenced by irrelevant variables. To meet those recommendations, comprehensible words were used, and the questionnaire was translated into Kinyarwanda to make sure all the intended content is covered. After the adaption of a structured international physical activity questionnaire, the CVI was tested and a score of 0.8 of CVI with an appropriate result for all item questions measured.

Statistical analysis

The quantitative data collected using the questionnaire was captured and analyzed using SPSS version 23 for Windows. Data was aggregated and presented numerically, in statistical tables. A likert (rating) scale of 5 scores were used whereby five (5) is the maximum and 1 is the minimum. A cutoff of 3 and above of the mean rate was set to be high level of knowledge or attitude. Those scores were used to measure attitude and knowledge. The sufficient physical activities practice was set to ≥ 600 MET/week while the level below was measured as insufficient (Alqahtani et al., 2024).

For physical activity practice analysis, frequency tables for categorical variables were created to identify implausible values. Prior to multivariable logistic regression analysis,

multicollinearity among independent variables was assessed using the Variance Inflation Factor (VIF), and no evidence of multicollinearity was observed ($VIF < 5$). The fitness of the logistic regression model was evaluated using the Hosmer-Lemeshow goodness-of-fit test, which indicated that the model adequately fit the data ($p > 0.05$).

Descriptive statistics, bivariate and multivariate analysis were applied in this study to measure the relationship between variables, and the significance was set at 95% CI with $p < 0.05$.

RESULTS

Table 1 shows that 74.8% of the study participants knew that Physical activities help to preserve or enhance muscle strength and mass, 71.8% knew that Physical activities include housework and working in the garden. Around 78.2% knew that Physical activities include riding stationary or mobile bicycle. Additionally, this result showed that was only 42.2% knew that Physical activities include leisure working in the neighborhood.

Table 1. Knowledge of employees on physical activities among employees of Nyarugenge District, Rwanda. (n=206)

Variable	Frequency(n=206)	Proportion (%)
PA is any movement form of the body		
Yes	127	61.7
No	79	38.3
Safe physical activity increases breathing moderately		
Yes	122	59.2
No	84	40.8
Safe physical activity will create sweating moderately		
Yes	123	59.7
No	83	40.3
Physical activities include housework and working in the garden		
Yes	148	71.8
No	58	28.2
Physical Activities include Going up and down the stairs and dancing		
Yes	119	57.8
No	87	42.2
Physical activities include leisure working in the neighborhood		
Yes	148	71.8
No	58	28.2
Physical activities include riding stationery or mobile bicycle		
Yes	161	78.2
No	45	21.8
Physical activities help to combat many diseases		
Yes	157	76.2
No	49	23.8
Physical activities promote psychological well-being, reduces stress		
Yes	141	68.4
No	65	31.6

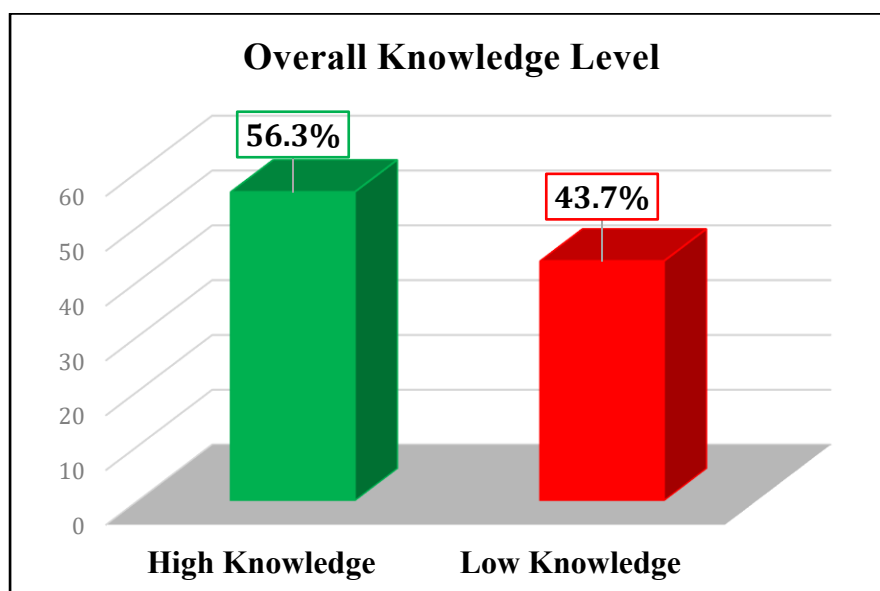
Physical activities strengthen endurance and stamina		
Yes	144	69.9
No	62	30.1
Physical activities make life happier		
Yes	148	71.8
No	58	28.2
Physical activities help to maintain or increase muscle mass and strength		
Yes	154	74.8
No	52	25.2
Physical activities Reduce the risk of overweight and obesity		
Yes	132	64.1
No	74	35.9
Physical activities don't have to be expensive		
Yes	144	69.9
No	62	30.1
Physical activities include recreational time		
Yes	140	68.0
No	66	32.0
Total	206	100%

Source: Primary Data, 2018

Considering the overall knowledge level of the participants in Figure 1, the results showed that more than half of participants (56.3%) have

high knowledge regarding physical activities and 43.7% have low knowledge regarding physical activities.

Figure 1: Overall level of knowledge regarding the Physical activities among Nyarugenge district workers.



Source: Researcher 2018

Table 2 shows the perceptions of respondents on attitudes towards physical activities. It was revealed that workers of Nyarugenge District have positive attitudes on physical activities as indicated in the following results: Physical

activities are not painful by 72.5% agreed (or reported positive perception) while 27.5% disagreed, majority of respondents reported that they didn't feel tired while doing physical activities by seventy five percent (75.0%) and

only twenty five percent (25.0%) were disagreed, feel comfortable while doing physical activities by seventy three point eight percent (73.8%) and only twenty six point two percent (26.2%) were disagreed, feeling happy while engaged in physical activities by seventy five percent (75.0%) and only twenty five percent (25.0%) were disagreed, and

respondents revealed that they have unchanged timetable for physical activities by seventy one point two percent (71.2%), and twenty eight point eight (28.8%). The researcher can conclude that workers from Nyarugenge District have positive attitudes towards physical activities as it indicated in table 2.

Table 2: Employees' attitudes towards physical activities (n=206).

Variable	Frequency	Proportion (%)	Mean	Interpretation
I think Physical activities are important to my health			2.7	High
SD	34	16.5		
D	72	35.0		
N	15	7.3		
A	75	36.4		
SA	10	4.8		
I think I need to be physically active to maintain my health status			2.9	High
SD	27	13.1		
D	70	34.0		
N	17	8.3		
A	65	31.5		
SA	27	13.1		
I think I need to do physical activities to prevent stress and other NCDs such hypertension and diabetes and cancers.			3.0	High
SD	20	9.7		
D	73	35.4		
N	9	4.4		
A	88	42.7		
SA	16	7.8		
I feel comfortable while doing physical activities			2.0	Low
SD	33	16.0		
D	147	71.4		
N	6	2.9		
A	19	9.2		
SA	1	.5		
I feel happy engaging in physical exercise			2.2	Low
SD	34	16.5		
D	126	61.2		
N	12	5.8		
A	26	12.6		
SA	8	3.9		
I think doing physical activities is not wasting time			3.0	High
SD	30	14.6		
D	56	27.2		
N	7	3.4		

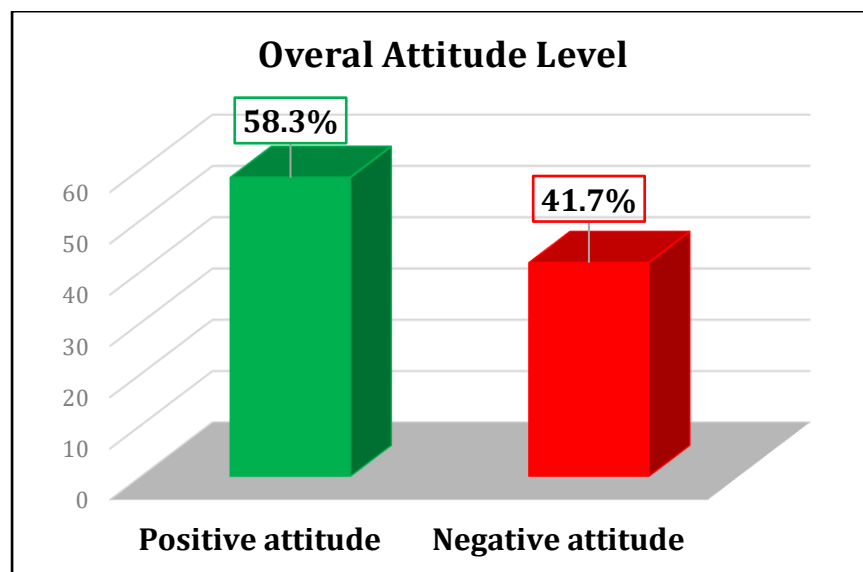
A	106	51.5		
SA	7	3.4		
Overall mean			2.6	High
Total	206	100%		

Source: Primary data, 2018

On the other hand, the overall attitude of the participants was the results in Figure 2 show that more than half of participants (58.3%) have

positive attitude towards physical activities and 41.7% have negative attitude towards physical activities.

Figure 2. Overall level of Attitude regarding the Physical activities among Nyarugenge district workers. (n=206)



Source: Primary data, 2018

The findings in table 3 (59.2%) reported that they have program of promoting physical activities in their institution. The majority of the respondents (71.8%) have enough materials or

equipment to do physical activities but (73.3%) reported that their leaders don't facilitate them to do physical activities.

Table 3. Facilities and material availability for Physical activity practice among employees of Nyarugenge District.

Variable	Frequency	Proportion (%)
Is there any program of promoting physical activities in this institution?		
Yes	122	59.2
No	84	40.8
Do your leaders facilitate you to do physical activities?		
Yes	55	26.7
No	151	73.3
Do you have enough materials or equipment to do physical activities?		
Yes	148	71.8
No	58	28.2
Total	206	100%

Source: Primary data, 2018

The findings of the study in the table 4 demonstrate that the majority of the respondents (66.5%) do physical activities while at work or at home or coming to work, but at the other hand during the last 7 days the

majority (66%) didn't do moderate physical activities at least 150–300 minutes per week of moderate-intensity and around 82.5% didn't also do vigorous engaging in 75–150 minutes each week of vigorous-intensity activity.

Table 4. Physical activity practice among employees of Nyarugenge District.

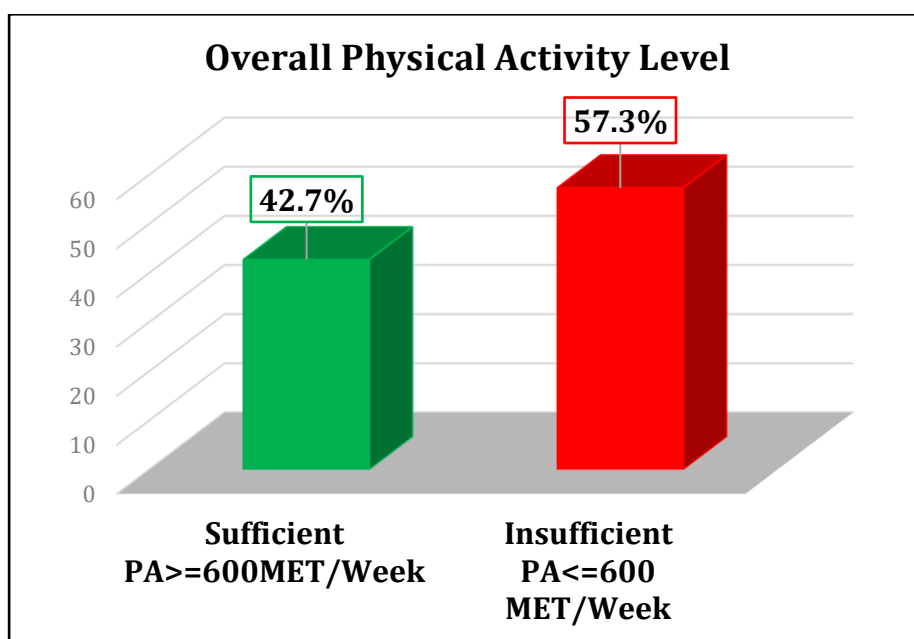
Variable	Frequency	Proportion (%)
Do you do physical activities while at work or at home or coming to work?		
Yes	137	66.5
No	69	33.5
During this week, did you do moderate activities at least 150–300 minutes per week of moderate-intensity?		
Yes	70	34.0
No	136	66.0
During this week, did you do energetic physical activities at least 75–150 minutes per week of energetic-intensity aerobic physical activity?		
Yes	36	17.5
No	170	82.5
Total	206	100%

Source: Primary data, 2018

On the other hand, the results of this study in Figure 3 show that more than half of

participants (57.3%) have insufficient physical activities.

Figure 3. Overall level of Physical activities Practice among Nyarugenge district workers. (n=206)



Source: Primary data, 2018

The bivariate analysis findings as shown in table 5 demonstrated that age, marital status, experience, over all attitude, over all knowledge, Physical activities at work or at home or coming to work, to have Enough materials or equipment to do physical activities,

significantly associated with Physical activities practice among workers of Nyarugenge district with $p < 0.05$, whereas sex, Facilitation to do physical activities by the leaders are not significantly associated.

Table 5. Bivariate analysis of factors associated with Physical activities practice among workers of Nyarugenge district

Variable	Physical activities practice level			Chi-square	P – value
	Insufficient (%)	Sufficient (%)	Total (%)		
Gender				.234	0.669
Male	71(34.5%)	50(24.3%)	121(58.7%)		
Female	47(22.8%)	38(18.4%)	85(41.3%)		
Total	118(57.3%)	88(42.7%)	206(100.0%)		
Age				13.839	<0.001
≥35 years	67(32.5%)	27(13.1%)	94(45.6%)		
<35years	51(24.8%)	61(29.6%)	112(54.4%)		
Total	118(57.3%)	88(42.7%)	206(100.0%)		
Experience				6.787	0.013
Under 1 year	99(48.1%)	84(40.8%)	183(88.8%)		
1-2years	19(9.2%)	4(1.9%)	23(11.2%)		
Total	118(57.3%)	88(42.7%)	206(100.0%)		
Level of education				10.511	0.1
No formal schooling	6(2.9%)	2(1.0%)	8(3.9%)		
Less than primary school	1(0.5%)	1(0.5%)	2(1.0%)		
Primary school completed	0(0%)	2(1.0%)	2(1.0%)		
Secondary school completed	12(5.8%)	8(3.9%)	20(9.7%)		
University completed	51(24.8%)	33(16.0%)	84(40.8%)		
Post graduated	42(20.4%)	42(20.4%)	84(40.8%)		
Refuse	6(2.9%)	0(0%)	6(2.9%)		
Total	118(57.3%)	88(42.7%)	206(100.0%)		
Marital status				10.549	0.020
Single	25(12.1%)	37(18.0%)	62(30.1%)		
Married	77(37.4%)	41(19.9%)	118(57.3%)		
Divorced	11(5.3%)	7(3.4%)	18(8.7%)		
Widow	5(2.4%)	3(1.5%)	8(3.9%)		
Total	118(57.3%)	88(42.7%)	206(100.0%)		
Overall attitude				15.396	<0.001
Negative attitude	63(30.6%)	23(12.2%)	86(41.7%)		
Positive attitude	55(26.7%)	65(31.6%)	120(58.3%)		
Total	118(57.3%)	88(42.7%)	206(100.0%)		
Overall, Knowledge				30.495	<0.001
Low knowledge	71(34.5%)	19(9.2%)	90(43.7%)		
High knowledge	47(22.8%)	69(33.5%)	116(56.3%)		
Total	118(57.3%)	88(42.7%)	206(100.0%)		
Physical activities at work or at home or coming to work				77.374	<0.001

Yes	49(23.8%)	89(42.7%)	137(66.5)		
No	69(33.5%)	0(0%)	69(33.5)		
Total	118(57.3%)	88(42.7%)	206(100.0%)		
To have Enough materials or equipment to do physical activities				7.555	0.008
Yes	76(36.9%)	72(35.0%)	148(71.8%)		
No	42(42%)	16(7.8%)	58(28.2%)		
Total	118(57.3%)	88(42.7%)	206(100.0%)		
Facilitation to do physical activities by the leaders				3.072	0.083
Yes	26(12.6%)	29(14.1%)	55(26.7%)		
No	92(44.7%)	59(28.6%)	151(73.3%)		
Total	118(57.3%)	88(42.7%)	206(100.0%)		

Source: Primary data, 2018

Multivariate analysis was conducted only for variables that were significant in the bivariate analysis. As presented in Table 6, eight out of the ten variables that were significant at the bivariate level remained statistically significant in the multivariate analysis. Only three variables were associated with physical activity at P-value<0.05. Positive attitude, High

knowledge, and age≤35 years were significant with AoR: 5.455 (2.666-11.162) and p<0.001; 3.315 (1.639-6.703) and p=0.001; 0.370 (0.184-0.747) and p=0.006). The remaining three variables (PA worksite program, PA leaders' facilitation, having enough materials for PA) were not significant with p=0.3, p=0.1, and p=0.2 respectively.

Table 6. Multivariate analysis for factors associated with physical activities practice among workers of Nyarugenge District.

Variables	Factors associated with physical activities practice≥600MET/Week		P-value
	AoR	95%CI	
Age			
≥35 years	Ref		
<35 years	.370	0.184-.747	0.006
Attitude			
Negative	Ref		
Positive	5.455	2.666-11.162	<0.001
Knowledge			
Low knowledge	Ref		
High knowledge	3.315	1.639-6.703	0.001
PA worksite program			
No	Ref		
Yes	1.507	0.677-3.354	0.315
PA leader facilitation			
No	Ref		
Yes	2.001	0.865-4.628	0.105
PA enough materials			
No	Ref		
Yes	1.624	0.713-3.699	0.249

Source: Primary data, 201

Discussion of Research Findings

The findings of this study indicate that 56.3% of Nyarugenge District workers demonstrated high knowledge regarding the health benefits of physical activity, while 43.7% had low knowledge. This suggests that a majority of workers are aware of the positive impacts of regular physical activity on health. These results are comparable to the study by Al Zahrani et al. (2025), in which 75.73% of healthcare professionals were aware of the health benefits of physical activity, and 76.70% had counseled patients about these benefits, although only 24.27% knew the true parameters for assessing physical fitness. Similarly, Wasfy and Lee (2022) reported that awareness of the relationship between physical activity and health outcomes promotes positive behavior change and enhances participation in physical activity.

Despite the relatively high knowledge among Nyarugenge workers, knowledge does not always translate into practice. Strain et al. (2024) found that although awareness of physical activity benefits has increased globally, substantial proportions of adults remain physically inactive. Likewise, a study in the USA by Daglas et al. (2024) showed that only 50% of healthcare providers had good knowledge of antenatal physical activity counseling, suggesting that gaps in knowledge can limit practical application. This implies that while awareness among Nyarugenge workers is encouraging, additional strategies such as role modeling, motivation, and structural support are needed to facilitate regular engagement in physical activity.

Also, the results of this study showed that 58.3% of Nyarugenge District workers had a positive attitude towards physical activities, while 41.7% exhibited a negative attitude. This indicates that a majority of workers recognize the significance of participating in physical activity for overall health and well-being.

Comparable results were reported by Kandasamy et al. (2024) among university students, where a majority of participants demonstrated a positive attitude towards physical activity. Similarly, Kandasamy et al. (2024) found that among adolescents in pre-health care programs, 63% displayed a positive attitude toward prescribed physical activity, while 37% showed a negative attitude. These comparisons suggest that, across different populations, a majority of individuals tend to have favorable attitudes towards engaging in physical activity.

Despite the generally positive attitude, a substantial proportion of participants in this study (41.7%) had a negative attitude, indicating persistent barriers or perceptions that may limit engagement in physical activity (Ominyi & Clifton, 2025). This is consistent with Christian et al. (2024), who reported that 42% of nurses in South Africa exhibited a negative attitude towards maintaining a healthy lifestyle, while 58% had a positive attitude. These findings highlight that even among populations knowledgeable about the benefits of physical activity, nearly half may still hold negative perceptions, putting an emphasis on the need for actions to improve motivation and overcome barriers.

Also, the results of this study show that 57.3% of Nyarugenge District workers have insufficient physical activity, while 42.7% engage in sufficient physical activity. This indicates that a majority of workers do not meet recommended activity levels. Comparatively, Strain et al. (2024) reported that insufficient physical activity remains highly prevalent among working-age adults globally. Similarly, World Health Organization (2024) found that nearly one-third of adults worldwide do not achieve the recommended levels of physical activity despite awareness of its benefits. These comparisons suggest that insufficient physical activity among workers is a common challenge

across different occupational and national contexts.

Further comparisons with healthcare professionals show a similar trend. In Ghana, Kohler et al. (2023) reported that nurses exhibited high levels of physical inactivity, while in KwaZulu-Natal, South Africa Mashita (2025) found that a majority of health professionals had low physical activity levels. Conversely, Ngeh et al. (2024) observed that physiotherapists in Rwanda had higher physical activity practice, although a minority still reported barriers. These findings indicate that while some occupational groups may demonstrate adequate activity levels, insufficient physical activity is prevalent among most workers, consistent with the results observed in Nyarugenge District.

The multivariate analysis showed that workers with a positive attitude were significantly more likely to engage in physical activity (AoR = 5.455; 95% CI: 2.666–11.162; $p < 0.001$). This indicates that workers who perceive physical activity favorably are over five times more likely to practice it compared to those with a negative attitude. Comparable results were reported by World Health Organization (2024), where motivation, enjoyment, and favorable perceptions of physical activity were identified as important determinants of participation. Similarly, Wasfy and Lee (2022) emphasized that positive beliefs and perceived benefits of physical activity are critical determinants of participation across diverse populations.

High knowledge of physical activity was also associated with increased practice (AoR = 3.315; 95% CI: 1.639–6.703; $p = 0.001$), suggesting that workers who understand the benefits of physical activity are more than three times as likely to be active. This finding aligns with global evidence showing that awareness and understanding of physical activity are essential for translating knowledge into practice. For instance, a recent aggregated report showed that insufficient knowledge contributes substantially to physical inactivity

worldwide (WHO, 2024). Similarly, Bowen et al. (2021) highlighted that knowledge of personal capability, and the benefit physical activity promotes adherence, confirming the critical role of knowledge in shaping behavior (Wu et al., 2024).

In contrast, age ≥ 35 years was negatively associated with physical activity practice (AoR = 0.370; 95% CI: 0.184–0.747; $p = 0.006$), indicating that older workers were less likely to engage in physical activity. This is consistent with findings by Strain et al. (2024), where physical inactivity was found to be more common among older adults. World Health Organization (2024) also noted that physical activity levels generally decline with increasing age. These comparisons highlight that age-related factor, including physical limitations and lifestyle patterns, may reduce participation in physical activity among older workers.

Study Limitations

This study had several limitations. First, the study relied on self-reported information regarding knowledge, attitudes, and physical activity practices. Consequently, the findings may have been affected by recall bias, as participants may not have accurately remembered or reported their physical activity behaviors. In addition, respondents may have overestimated or underestimated their activity levels due to social desirability. Second, the cross-sectional nature of the study limited the establishment of cause-and-effect relationships, allowing only the identification of associations.

Study Implications

The high prevalence of insufficient physical activity among workers in Nyarugenge District highlights the need for workplace-based interventions, including health education, awareness campaigns, supportive workplace policies, and fitness promotion programs. Additionally, the significant association between knowledge, attitude, and physical activity practice suggests that interventions

should focus on improving awareness, motivation, and positive attitudes toward physical activity. Integrating physical activity promotion into occupational health programs may help reduce physical inactivity and the burden of non-communicable diseases among workers.

CONCLUSION

This study concluded that high knowledge, positive attitude, and age ≤ 35 years were scientifically and significantly linked with the physical activity practice. These are crucial indicators to raise awareness through different levels of key advocates, policymakers, ministry of health and other key stakeholders that workplace health promotion would be a game changer element to heighten employee's health through increasing physical activity practices.

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Author contributions

ZRG contributed to the conceptualization, data curation, formal analysis, methodology, and writing of the original draft of the manuscript. CN and MH contributed to the review and editing of the manuscript. All authors read and approved the final version of the manuscript.

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Data availability

All data generated or analysed during this study are included in this published article.

Ethics approval and consent to participate

The researcher obtained consent from participants after being informed about the research objectives. The researcher obtained consent from participants after being informed about the research objectives. The proposal of the research was approved by the Research and Ethics Committee of the Mount Kenya University. Permission for data collection (Ref: 2114/01/01/08 of 18/05/2015) was granted by the Nyarugenge district authorities after submission of written request by researcher.

Competing interests

The authors declare no competing interests.

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