African Journal of Education Science and Technology (AJEST) Vol. 8 No.1 (October, 2024)
University of Eldoret, Kenya, Mount Kenya University, Kenya, Chukwuemeka Odemegwu Ojukwu University, Nigeria, Kyambogo University, Uganda and University of Makeni, Sierra Leone

Modeling Physical Inactivity among University of Eldoret Staff in Kenya using a Logit Model.

*Willie Mercy Kavila, Julius Koech, Victor Kimeli.
Department of Mathematics and Computer Science, P.O Box 1125-30100, University of Eldoret.

***Corresponding email**: mercykavilah@gmail.com*

Abstract

Physical inactivity (PI) is a significant contributor to non-communicable diseases globally. This study focused on assessing the prevalence of PI among staff at the University of Eldoret and exploring the factors that contribute to it. The goal was to improve staff well-being, thereby enhancing overall organizational output and service quality. The study utilized a descriptive case study design, collected data through self-report questionnaires. The questionnaire covered demographic information, sedentary behaviors, and physical activity. The data were summarized using means and standard deviations, and presented through frequency distribution tables as well as graphical techniques for categorical variables. 321 employees participated in the study. Among female employees, the majority had perfect, good, and average fitness levels compared to male employees (70.4% vs. 29.6%, 80.1% vs. 19.9%, and 70.3% vs. 29.7%, respectively). A similar trend was observed among non-teaching staff compared to teaching staff. The prevalence of PI among employees was 36%, higher than the global prevalence of 25% among adults. The statistically significant factors associated with PI were low monthly income (AOR=0.31, 95%CI=0.1159-0.8351), lack of a physical activity plan (AOR=1.85, 95%CI=1.0877-3.1957), and higher BMI levels (AOR=4.29, 95%CI=1.1156-21.4148). Wealthier individuals had a lower risk of PI, although the association was not statistically significant. The study recommends promoting physical activity awareness and wellness programs in institutions. By identifying influential factors related to PI, the study provides crucial information for decision-making and policy formulation aimed at promoting a more active and healthier lifestyle among employees in similar settings.

***Keywords**: Physical Inactivity, Wealth Index, Lifestyle, Noncommunicable diseases*

INTRODUCTION

Physical inactivity is a weighty global issue that has resulted in a notable increase in non-communicable diseases (NCDs) and mortality rates (Ding et al., 2016). The rising cases of NCDs, together with the subsequent economic burden, have drawn the attention of states and nations, motivating them to come up with solutions for this health pandemic (Weltgesundheitsorganisation. Regionalbüro für Europa & Wirtschaftskommission für Europa, 2022). Globally, physical inactivity prevalence is at 25% (Checkley et al., 2014). The World Health Organization (WHO), has been at the forefront of measuring, monitoring, and evaluating physical activity. Some initiatives and targets have been established to reduce the cases of NCDs in both children and adults worldwide. (*Noncommunicable Diseases Progress Monitor 2022.Pdf*, n.d.). The majority of NCDs are nontransmissible, with prevalent disorders being hypertension, heart disease, pulmonary hypertension, chronic obstructive pulmonary disorder, and diabetes. (Budreviciute et al., 2020). Physical inactivity has led to around 6% of all NCD-related deaths (Katzmarzyk et al., 2022). Most of the NCDS causative variables (dietary and behavioral) are modifiable (Ezzati Majid & Riboli Elio, 2013) though some are genetic, sociodemographic, and environmental (Goryakin et al., 2017).

With the rise in NCD cases reported, 43% of new cases are mentally inclined, 75% are documented in LMICs, and 1 in 5 NCD patients are unable to regulate their condition (Islam, 2021). Every year, NCDs account for over 55% of mortality in Kenya and half of hospital admissions (Kiragu et al., 2022). According to reports, at least 5% of Kenyans fall below the WHO-approved threshold for PA, which raises risk of developing the country's predominant NCDs—cancer, mental illnesses, diabetes, heart disease, and chronic obstructive pulmonary diseases (*Brief-57-ADDRESSING-THE-RAISING-BURDEN-OF-NON-COMMUNICABLE-DISEASES-IN-KENYA.Pdf*, n.d.). Being physically inactive increases risk of death for those with non-communicable diseases (NCDs) (Anderson & Durstine, 2019). Young individuals in their prime years of productivity are being affected by NCDs, which renders them financially and health-wise incapacitated and increases the cost of managing NCDs (Mtintsilana et al., 2023) It has been anticipated that by 2030, Kenya will see a 55% rise in the reported deaths from NCDs. (*Brief-57-ADDRESSING-THE-RAISING-BURDEN-OF-NON-COMMUNICABLE-DISEASES-IN-KENYA.Pdf*, n.d.).

Consistent physical activity is a cost-effective therapy that enhances mental health, improves heart health, and aids in weight management (Ruegsegger & Booth, 2018). Physical activity has a lot of benefits, like improved societal well-being. Communities that prioritize physical fitness frequently see more socializing, lower crime rates, better mental health outcomes, and less pollution and traffic congestion (World Health Organization, 2018). Thus, regular exercise is a natural treatment for many health-related difficulties by improving immunity, reducing functional limits, and, consequently, the risk of mortality from NCDs (Leskinen et al., 2018). People who constantly exercise are psychically and corporeally prepared to confront problems in life because they build endurance and an indomitable spirit (Malm et al., 2019). WHO advises at least 150 minutes weekly of aerobics and some muscle-building activities with reduced sitting time for persons aged 18 to 64 (Saqib et al., 2020).

METHODOLOGY

Study Site

The research was conducted at the University of Eldoret, Uasin Gishu county of Kenya.

Study Design

The study used a descriptive design with self-report questionnaires to collect data on demographics, sedentary behaviors, and physical activity. The study focused on both teaching and non-teaching staff at the main and Town campuses. The study involved 242 non-teaching personnel and 78 teaching staff. 147 male and 174 female employees agreed to participate in the survey.

Study Variables under Investigation

Physical inactivity (PI) was selected as the outcome variable of interest and coded as a binary variable (yes=1 and no=0). The PI variable was established based on the study individuals' current level of fitness. Those in the average, poor, and unfit categories were coded as physically inactive and thus assigned a score of 1, whereas the other comparison group with perfect and high levels of fitness was also coded as 0, to point to physically active. This caused the outcome variable to be binary in nature. The researcher also investigated data on demographic information, socio-demographic factors, causes of PI, exercise plan or routine, sitting hours, amount of physical intensity required (energy expenditure), and wealth index generated through ownership of household assets (Gamage & Seneviratne, 2021).

To construct a wealth index among research participants, the principal component analysis (PCA) method was applied. The PCA is commonly utilized when the variables used are highly correlated, and it has been proven that using monthly income to estimate individual wealth status is biased. As a result, the wealth categories were constructed using quartiles, with individuals in the lower wealth quartiles being classified as poor, and those in the top quartile being classified as moderate or wealthiest.

Statistical analysis

Data was entered into the Statistical Packages for Social Scientists (SPSS), cleaned, and then exported to R for analysis. Descriptive analysis developed metrics of central tendency, such as means and standard deviations, for socioeconomic data. Data was presented using frequency distribution tables and graphs (pie charts and bar graphs) To generate the wealth index among the study participants, PCA was employed, with these factors taken into account: having a TV, having a radio, having a computer, owning a house, having a microwave, having tap water, having a smartphone, and having an indoor bathroom. The wealth index categorized the study participants into three wealth statuses. This was regarded as one of the predictor variables of relevance in the model. Furthermore, statistical interpretation was used utilizing bivariate association with chi-square and multivariate logistic regression models, respectively. A p-value of less than 5% was chosen as the significance level, with a 95% confidence range around the obtained parameter values.

RESULTS AND DISCUSSION

Prevalence of physical inactivity

The overall rate of physical inactivity among employees was 36%, with the remaining 64% being physically active (Figure 1). With a global PI prevalence of 25%, the PI levels measured at the institution were extremely high. These results mirror the Kenyan NCDs data, which suggest that roughly 120,000 lives are yearly to NCDs (*Noncommunicable Diseases Progress Monitor 2022.Pdf*, n.d.)

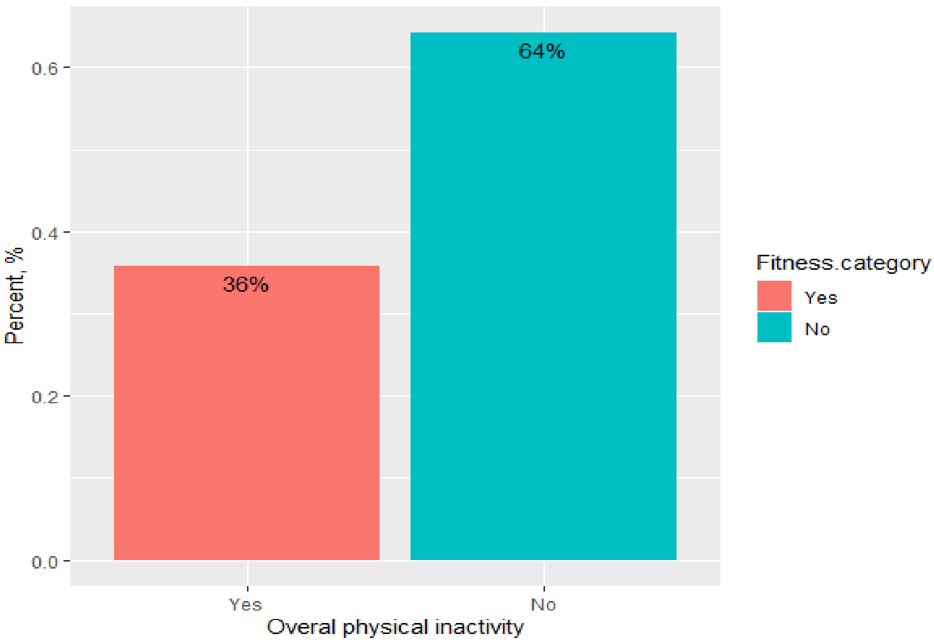

Figure 1. Overall percentage of the physical inactivity

57% of respondents were between the ages of 20 and 45 years, which is considered a prime period for productivity but also susceptible to NCD development. Investigations on association and physical inactivity among young individuals exist. There exists a substantial risk of young adults dying prematurely, and the odds are larger in men (*World Health Statistics 2023 – Monitoring Health for the SDGs*, 2023). The average weight was 73.38 kg, with a std. deviation (SD) of 15.82 kg and a median weight of 75 kg (range, min=0, max=125). The average height was 1.67 meters, with a std. deviation of (SD=0.48). The participant's weight and height were used to construct the body mass index (BMI), and the following categories were established. 29.6% of the personnel have a normal or suggested BMI. 24.9% were identified as overweight. 24.6% were obese, whereas 4% were underweight. Obesity has harmed health (Wiklund, 2016). Regular physical exercise aids in the maintenance of desirable body weights by regulating appetite, calorie intake, and long inactive hours (Hills et al., 2011). It assists in numerous aspects of weight management, such as weight loss, maintenance after weight loss, insulin sensitivity, and cardio-respiratory and muscular fitness (Oppert et al., 2021).

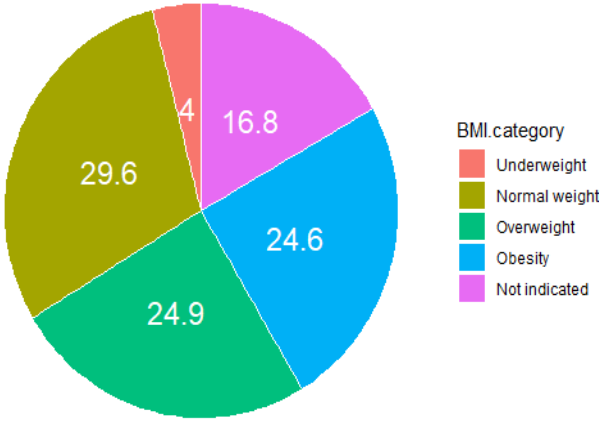

Figure 2. Percent distribution of BMI categories

Level of fitness by gender

Female employees reported higher percentages in perfect, good, and ordinary fitness levels than male employees (56.8% vs. 43.2%, 53.1% vs. 46.9%, and 51.5% vs. 48.5%, respectively). They also bear higher percentages in the poor and unfit categories than male employees (81.8% vs. 18.2% and 66.7% vs. 33.3%, respectively). The high percentages of female workers in the poor and unfit categories are consistent to a study by GarMendia et al (2018), which found a lower prevalence of activity among women.

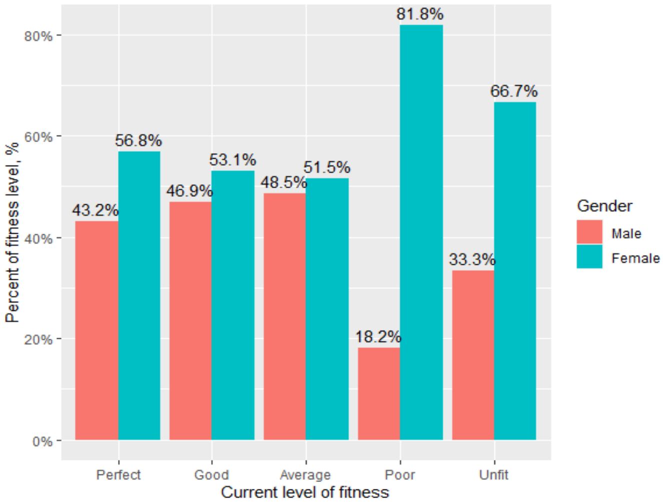

Figure 3. Percent distribution of the level of fitness by gender

Level of fitness by job cadre

Non-teaching personnel had greater rates of perfect, good, and ordinary fitness than teaching staff (70.4% vs. 29.6%, 80.1% vs. 19.9%, and 70.3% vs. 29.7%, respectively). Non-teaching staff, also, had greater rates of poor and unfit fitness (81.82% vs 18.18% and 66.67% vs 33.33%), respectively. The outcomes of non-teaching personnel are linked to sedentarism, which is associated with long sitting hours in offices, whereas teaching staff have routines that include some moderate-intensity physical activities.

Figure 4. Percent distribution of fitness by job cadre

Bivariate association of physical inactivity and sociodemographic factors

Participants' ages did not have an influence on the level of physical inactivity. Gender, job category, and educational level were not associable risk factors for physical inactivity among respondents. (Table 4). Participants' BMI and knowledge of the advantages of physical activity significantly influenced their physical activity (p<0.10).

Table 1: Table showing bivariate association of physical inactivity with selected factors of interest n=321

	Physically inactive		
Factors	**Yes, n (%)**	**No, n (%)**	**p-value**
Age category			
<=35 years	36 (31.9)	51 (25.6%)	0.4357[1]
36-45 years	31 (27.4)	65 (32.7)	
>45 years	46 (40.7)	83 (41.7)	
Gender			

Male	52 (43.2)	95 (46.1)	0.9695[1]
Female	63 (54.8)	111 (53.9)	
Level of participants Education			
Below secondary level	14 (12.2)	33 (16.0)	0.6035[1]
Tertiary level	23 (20.0)	37 (18.0)	
Bachelor's degree level	33 (28.7)	68 (33.0)	
Masters level	28 (24.3)	47 (22.8)	
PhD level	17 (14.8)	21 (10.2)	
Job Cadre			
Non-teaching staff	82 (71.3)	160 (78.0)	0.2253[1]
Teaching staff	33 (28.7)	45 (22.0)	
Monthly Income (Ksh)			
<20,000	12 (10.6)	14 (6.8)	0.2205[1]
20,000-40,000	26 (23.0)	67 (32.5)	
40,000-60,000	22 (19.5)	48 (23.3)	
60,000-80,000	15 (13.3)	23 (11.1)	
>80,000	38 (33.6)	54 (26.2)	
BMI category			
Underweight	3 (2.6)	10 (4.9)	**0.0208**[2]**
Normal weight	26 (22.6)	69 (33.5)	
Overweight	29 (25.2)	51 (24.8)	
Obesity	40 (34.8)	39 (18.9)	
Not indicated	17 (14.8)	37 (18.0)	
Lack of knowledge of the benefits of physical activity			
Yes	35 (30.4)	85 (41.3)	**0.0715*[1]**
No	80 (69.6)	121 (58.7)	
Wealth status			
Poor	17 (14.8)	26 (12.6)	0.2696
Moderate	12 (10.4)	35 (17.0)	
Rich	86 (74.8)	145 (70.4)	

1-chi-square test, 2-fishers exact test,**(significant at p<0.05), *(significant at p<0.10)

A multivariate logistic regression model of factors associated with physical inactivity

Physical inactivity was significantly influenced by low monthly income, BMI (overweight), and the absence of a physical activity plan or regimen. Staff with low monthly incomes may find it difficult to commit finances to paid physical activity subscriptions such as sports clubs, bicycle purchases, electronic tracking devices for monitoring daily physical activity targets, and so on. Furthermore, they are unlikely to follow healthy diets, which can be costly. Lack of an exercise plan or routine on the other hand contributes to physical inactivity by reducing the consistency of physical activities. This affects the willpower and the progressiveness of an individual towards achieving the healthy benefits of PA.

A rise in BMI levels was linked to an increased risk of physical inactivity. Though age, gender, marital status, and education level were not found to be statistically significant predictors of fitness, their influence on physical activity participation among those in "white collar" occupations has been documented.

Table 2: A multivariate logistic regression model of factors associated with physical inactivity among employees

Call:
glm(formula = Fitness.ct ~ age.ct + Gender + marital.ct + edu.ct + Monthly_income + Job_cadre + Exercise_plan + BMI.cat + knowledge.ct + wealth.ct, family = "binomial", data = lifestyle.data.6)

Coefficients:				
	Estimate	**Std. Error**	**z value**	**Pr(>|z|)**
(Intercept)	-0.4933	0.971050	-0.508	0.6114
Age≤ 35 *years*	-0.5135	0.360555	-1.424	0.1544
Age> 35*years*	-0.5629	0.353350	-1.593	0.1112
Female gender	-0.0440	0.286409	-0.154	0.8779
Marital (***Married***)	0.195974	0.349154	0.561	0.5746
Marital (***Not married***)	-0.664973	0.786640	-0.845	0.3979
<secondary education	0.412980	0.486077	0.850	0.3955
Bachelors education	0.012360	0.493283	0.025	0.9800
Masters education	-0.363496	0.578035	-0.629	0.5294
Doctorate education	-0.001725	0.698455	-0.002	0.9980
MI (20,000-40,000)	-1.161833	0.500441	-2.322	**0.0203** *
MI (40,000-60,000)	-0.779898	0.527482	-1.479	0.1393
MI (60,000-80,000)	-0.600582	0.597801	-1.005	0.3151
MI(> 80000)	-0.378180	0.622213	-0.608	0.5433
Job_cadre(Teaching staff)	-0.040775	0.457491	-0.089	0.9290
Have an exercise plan				
(No vs.Yes)	0.614726	0.274263	2.241	**0.0250** *
Normal weight	0.287914	0.726446	0.396	0.6919

Overweight	0.622408	0.726346	0.857	0.3915
Obesity	1.457345	0.732403	1.990	**0.0466** *
Nonresponse_BMI	0.268246	0.764148	0.351	0.7256
Lack of Knowledge on PA	-0.062497	0.613350	-0.102	0.9188
Wealth moderate	-0.736922	0.518343	-1.422	0.1551
Wealth rich	-0.109832	0.411141	-0.267	0.7894

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				
Reference categories: <=35 years, male gender, <secondary level of education, non-teaching job cadre, <20,000 monthly incomes, underweight level of BMI, yes vs. no-have no plan for exercise & poor wealth status				
(Dispersion parameter for binomial family taken to be 1)				
Null deviance: 403.54 on 308 degrees of freedom				
Residual deviance: 371.90 on 286 degrees of freedom				
(12 observations deleted due to missingness)				

AIC: 417.9

Number of Fisher Scoring iterations: 4

CONCLUSION AND RECOMMENDATION:

The prevalence rate of physical inactivity at the University of Eldoret is 36%, which is higher than the global average of 25%. This is due to a drop in habitual and occupational PA in the institution. Majority of university's faculty and personnel are under the age of 50, which is considered a productive age in any workforce. 29.6% of the crew has a normal / suggested BMI. 24.9% were overweight. 24.6% were obese, whereas 4% were underweight. Obesity has a clear causal association with various Noncommunicable diseases (type 2 diabetes, hypertension, breast, liver, colorectal, and kidney cancer). Employees at the institution sit for an average of 4-5 hours without taking a break in between. Using the one-way ANOVA test, there is variance between the job type and time spent sitting by employees. The WHO recommends reducing inactive time for optimal health results (*WHO Guidelines on Physical Activity and Sedentary Behaviour*, 2020).

There was no association between job category, level of education, age, and wealth status with physical inactivity. However, being overweight (BMI), lack of knowledge of the benefits of physical activity, whether an individual had an exercise plan/ routine and low monthly income (20,000 – 40,000 Kes) had relationship with physical inactivity.

To lessen the undesired impacts resulting from excessive sitting hours, brief walks should be considered in between. Internal fitness evaluations between genders demonstrate that women are more prone to be classified as poor or unfit than male employees (81.8% vs. 18.2%, 66.7% vs. 33.3%). Non-teaching personnel exhibited larger percentages of poor and unfit fitness levels (81.82% vs 18.18% and 66.67% vs 33.33%), implying that teaching staff is more likely to be fit than non-teaching staff. As per the findings, age, gender, job type, and education level were not significant predictors of physical inactivity, but t are likely to influence how and which physical activities people engage in. Obesity, lack of information about the benefits of physical activity, lack of exercise regimen, and low monthly income (<20,000) all contribute to physical inactivity.

Personal efforts to meet the suggested levels of PA (150 minutes/week) are required for a healthy lifestyle. Public education on NCDs and need of PA for workers will help raise awareness of the necessity for physical exercise as a lifestyle. Strengthening interventions for PA at the university will also serve to sensitize staff about the facilities available to them for a more active community. Furthermore, the university management can implement new strategies to encourage staff to live an active life, such as regular sensitization on public health, particularly NCDs, staff sports day, allocation of scheduled days for active commuting for all staff, and regular reminders on personal efforts to be physically active.

Noncommunicable illnesses require additional investigation due to their high morbidity and mortality rates. A comparable study should be carried out in more organizations to determine the influence of PI on NCDs. Furthermore, a clinical approach study that includes data on some aspects such as weight, height, and fitness can be measured for accuracy and unbiasedness, resulting in more reliable findings that provide detailed statistics on the intervention of physical activity preventing and/or managing modifiable lifestyle diseases. Although dealing with physical inactivity can aid in dealing with the other modifiable risk factors of NCDs, a study of the other modifiable factors and their contribution to NCDs can shed light on strategies for regulating and mitigating the rising cases.

REFERENCES

Anderson, E., &Durstine, J. L. (2019). Physical activity, exercise, and chronic diseases: A brief review. Sports Medicine and Health Science, 1(1), 3–10. https://doi.org/10.1016/j.smhs.2019.08.006

Brief-57-ADDRESSING-THE-RAISING-BURDEN-OF-NON-COMMUNICABLE-DISEASES-IN-KENYA.pdf. (n.d.). Retrieved 19 April 2024, from https://ncpd.go.ke/wp-content/uploads/2021/02/Brief-57-ADDRESSING-THE-RAISING-BURDEN-OF-NON-COMMUNICABLE-DISEASES-IN-KENYA.pdf

Budreviciute, A., Damiati, S., Sabir, D. K., Onder, K., Schuller-Goetzburg, P., Plakys, G., Katileviciute, A., Khoja, S., &Kodzius, R. (2020). Management and Prevention Strategies for Non-communicable Diseases (NCDs) and Their Risk Factors. Frontiers in Public Health, 8, 574111. https://doi.org/10.3389/fpubh.2020.574111

Checkley, W., Ghannem, H., Irazola, V., Kimaiyo, S., Levitt, N. S., Miranda, J. J., Niessen, L., Prabhakaran, D., Rabadán-Diehl, C., Ramirez-Zea, M., Rubinstein, A., Sigamani, A., Smith, R., Tandon, N., Wu, Y., Xavier, D., Yan, L. L., & National Heart, Lung, And Blood Institute, G. N., UnitedHealth Group/. (2014). Management of NCD in Low- and Middle-Income Countries. Global Heart, 9(4), 431. https://doi.org/10.1016/j.gheart.2014.11.003

Ding, D., Lawson, K. D., Kolbe-Alexander, T. L., Finkelstein, E. A., Katzmarzyk, P. T., Van Mechelen, W., & Pratt, M. (2016). The economic burden of physical inactivity: A global analysis of major non-communicable diseases. The Lancet, 388(10051), 1311–1324. https://doi.org/10.1016/S0140-6736(16)30383-X

Ezzati Majid &Riboli Elio. (2013). Behavioral and Dietary Risk Factors for Noncommunicable Diseases. New England Journal of Medicine, 369(10), 954–964. https://doi.org/10.1056/NEJMra1203528

Gamage, A. U., &Seneviratne, R. D. A. (2021). Physical inactivity, and its association with hypertension among employees in the district of Colombo. BMC Public Health, 21(1), 2186. https://doi.org/10.1186/s12889-021-12013-y

Goryakin, Y., Rocco, L., &Suhrcke, M. (2017). The contribution of urbanization to non-communicable diseases: Evidence from 173 countries from 1980 to 2008. Economics & Human Biology, 26, 151–163. https://doi.org/10.1016/j.ehb.2017.03.004

Hills, A. P., Andersen, L. B., & Byrne, N. M. (2011). Physical activity and obesity in children. British Journal of Sports

Medicine, 45(11), 866–870. https://doi.org/10.1136/bjsports-2011-090199

Islam, F. M. A. (2021). Factors Associated with Physical Activity among People with Hypertension in a Rural Area in Bangladesh: Baseline Data from a Cluster Randomized Control Trial. International Journal of Environmental Research and Public Health, 18(14), 7365. https://doi.org/10.3390/ijerph18147365

Katzmarzyk, P. T., Friedenreich, C., Shiroma, E. J., & Lee, I.-M. (2022). Physical inactivity and non-communicable disease burden in low-income, middle-income and high-income countries. British Journal of Sports Medicine, 56(2), 101–106. https://doi.org/10.1136/bjsports-2020-103640

Kiragu, Z. W., Rockers, P. C., Onyango, M. A., Mungai, J., Mboya, J., Laing, R., &Wirtz, V. J. (2022). Household access to non-communicable disease medicines during universal health care roll-out in Kenya: A time series analysis. PLoS ONE, 17(4), e0266715. https://doi.org/10.1371/journal.pone.0266715

Leskinen, T., Stenholm, S., Aalto, V., Head, J., Kivimäki, M., &Vahtera, J. (2018). Physical activity level as a predictor of healthy and chronic disease-free life expectancy between ages 50 and 75. Age and Ageing, 47(3), 423–429. https://doi.org/10.1093/ageing/afy016

Malm, C., Jakobsson, J., & Isaksson, A. (2019). Physical Activity and Sports—Real Health Benefits: A Review with Insight into the Public Health of Sweden. Sports, 7(5), 127. https://doi.org/10.3390/sports7050127

Mtintsilana, A., Craig, A., Mapanga, W., Dlamini, S. N., & Norris, S. A. (2023). Association between socio-economic status and non-communicable disease risk in young adults from Kenya, South Africa, and the United Kingdom. Scientific Reports, 13(1), 728. https://doi.org/10.1038/s41598-023-28013-4

Noncommunicable Diseases progress monitor 2022.pdf. (n.d.).

Oppert, J., Bellicha, A., Van Baak, M. A., Battista, F., Beaulieu, K., Blundell, J. E., Carraça, E. V., Encantado, J., Ermolao, A., Pramono, A., Farpour-Lambert, N., Woodward, E., Dicker, D., &Busetto, L. (2021). Exercise training in the management of overweight and obesity in adults: Synthesis of the evidence and recommendations from the European Association for the Study of Obesity Physical Activity Working Group. Obesity Reviews, 22(S4), e13273. https://doi.org/10.1111/obr.13273

Ruegsegger, G. N., & Booth, F. W. (2018). Health Benefits of Exercise. Cold Spring Harbor Perspectives in Medicine, 8(7), a029694. https://doi.org/10.1101/cshperspect.a029694

Saqib, Z. A., Dai, J., Menhas, R., Mahmood, S., Karim, M., Sang, X., &Weng, Y. (2020). Physical Activity is a Medicine for Non-Communicable Diseases: A Survey Study Regarding the Perception of Physical Activity Impact on Health Wellbeing. Risk Management and Healthcare Policy, Volume 13, 2949–2962. https://doi.org/10.2147/RMHP.S280339

Weltgesundheitsorganisation. Regionalbürofür Europa &Wirtschaftskommissionfür Europa. (2022). Wiener Erklärung: EinebessereZukunftbauen – die Weichenstellenfüreineneue, saubere, sichere, gesunde und integrative Mobilität. https://apps.who.int/iris/handle/10665/353808

WHO guidelines on physical activity and sedentary behaviour. (2020). World Health Organization.

Wiklund, P. (2016). The role of physical activity and exercise in obesity and weight management: Time for critical appraisal. Journal of Sport and Health Science, 5(2), 151–154. https://doi.org/10.1016/j.jshs.2016.04.001

World Health Organization. (2018). Global action plan on physical activity 2018–2030: More active people for a healthier world. World Health Organization. https://iris.who.int/handle/10665/272722

World health statistics 2023 – Monitoring health for the SDGs. (2023).