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# Physical activity levels and associated socio-demographic factors among Medical officers and Nursing officers in national hospital for respiratory diseases (NHRD) Welisara

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**Abstract**
Regular physical activity is an essential ingredient to a healthy lifestyle. Because of the busy schedule of healthcare workers in hospitals, engaging in regular physical activity is a challenge for them. Therefore, this study was planned to describe Physical activity levels among Medical officers and Nursing officers in the National Hospital for Respiratory Diseases (NHRD) Welisara. This was a hospital based descriptive cross-sectional study. All Medical officers and Nursing officers who were attached to NHRD Welisara and having minimum of three months' period of service were included. The self-administered version of International Physical Activity Questionnaire (IPAQ) was used for data collection. The study had 144 participants with the mean age of 36.88 years. Male and female participants were 15.3% and 84.7% respectively. Out of all 77.8% were married. Ethnic distribution was Sinhalese 94.4% and Tamil 5.6%. out of all participants, 11.8% (n=17) had low physical activity levels, 36.8% (n=53) had moderate physical activity level and 51.4% (n=74) had high level of physical activity. There were no statistically significant differences of results according to their gender, marital status or ethnicity. However, statistically significant difference was observed among age categories. The study further revealed that Nursing Officers had significantly high level of physical activity compared to that of Medical Officers. As the conclusion, Majority of participants, 88.2% had moderate or high level of physical activity. The level of physical activity was not varied significantly by gender, marital status or ethnicity. However, statistically significant difference was observed among age categories and professional categories.

**Keywords:** physical activity, socio-demographic factors

## Introduction

### 1. Background

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure. Physical inactivity has been identified as the fourth leading risk factor for global mortality causing an estimated 3.2 million deaths globally. Sri Lanka is a middle-income country with rising cases of non-communicable diseases for which physical inactivity is a major risk factor. (*World Health Organization - Noncommunicable Diseases Country Profiles, 2014.*)

Both allopathic and alternative healthcare exist in Sri Lanka. However, a large proportion of clients selects allopathic medicine as the first and the best option due to various reasons. The majority of clients seek allopathic care from government health sector in which free health care is provided. Importance of regular physical activity has been highlighted at all levels of allopathic care in Sri Lanka from policy making to primary health care services. Further, regular physical activity has been encouraged at different health settings. 'Moderate physical activity for 30 minutes for 5 days' has become a slogan to battle against rapidly rising cases of non-communicable diseases. Medical officers and nursing offers play an important role in advising on physical activity both in curative and preventive health sectors. In Sri Lanka, there are 15,873 medical officers and 31,580 nursing officers working in government health sector (Ministry of Health, 2014). However, levels of physical activity among health care workers are not much explored in Sri Lanka

### 2. Justification

Regular physical activity is an essential ingredient to a healthy life style. World Health Organization (WHO) recommends at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity for adults aging 18–64 years (WHO, 2014). Rising number of cases of

non-communicable diseases has given even more importance for regular physical activity. A number of recent studies have shown that regular physical activity is beneficial for people with various health problems also, e.g. cardiovascular, musculoskeletal, obesity, and emotional disorders and regular physical activity can lead to reductions in risk factors for chronic disease and disability. (Warburton *et al*. 2006, Hinrichs *et al*. 2011) [25, 10] In all non-communicable disease prevention strategies, regular physical activity is a major component which is being repetitively highlighted. A number of directorates of Health Ministry such as Non-Communicable disease unit, Nutrition division, and health education Bureau are carrying out various awareness and health promotion activities on regular physical activity. Healthy life style centres attached to primary health care units such as central dispensaries are introduced by the health ministry to promote healthy life style in which Physical activity is a major ingredient. Further, Health education units, Nutrition units, Sport medicine units in hospitals carry out various awareness campaigns to promote physical activity among staff and clients. Medical officers and Nursing offers play a key role in delivering these health messages to health care seekers and community. Therefore, medical officers and Nursing officers should ideally be engaging in regular physical activities to make their own lifestyle healthy and to become role models for clients. It is usual that clients tend to take their health care providers as examples in improving their own health.

With the busy working environment in Government hospitals, engaging in regular physical activity has become challenging for them. According to Sri Lanka health ministry annual report 2014 there were only 76.9 Medical officers per 100,000 populations and only 152.7 Nursing officers. 'Are Sri Lankan government Medical offers and government Nursing officers engaging in recommended number of physical activities?' is a very valid question with paramount importance to answer. Even though physical activity level of Sri Lankan adults has been researched to some extent, there is hardly any research evidence on above subject.

Similar to other hospitals, in NHRD Medical officers and Nursing officers play the key role in advising on physical activity. Currently there is no gymnasium inside the hospital to be utilised for the staff. So, engaging in regular physical activates has become challenging for NHRD Medical officers and Nursing offers. This research is aimed at providing scientific description on their level of physical activity and it will be useful for formulating policies and implementing strategies

## 3. Purpose of the study

### General Objective

To describe physical activity levels among government Medical officers and Nursing offers in the National Hospital for Respiratory Diseases Welisara.

### Specific objectives

1. To assess physical activity levels among government Medical officers and Nursing officers in National Hospital for Respiratory Diseases Welisara.
2. To describe how physical activity varies with age category, sex, ethnicity, staff category and marital status among government Medical officers and Nursing offers in National Hospital for Respiratory Diseases Welisara.

## Chapter 2

## Literature review

Physical activity will generally refer to body movement that enhances health. Health enhancing activity refers to those that are added to baseline activity which produces health benefits, such as weight lifting, climbing on playground equipment at recess, doing yoga, dancing and brisk waking. Regular physical activity not only reduces the risk of man advanced health outcomes such as cardiovascular disease, malignancies, hypertension, dyslipadaemia but helps maintain a desirable body weight and enhances the mental well-being (Technical Report on Physical Activity and Sedentary Behaviour Guideline for Public Discussion in Sri Lanka, 2018).

Working citizens were more productive and in better shape if they were exercising systematically (Randstad work monitor Surveyor 2014). Limited data are available on physical activity tracking among low and idle income countries (Pathirage *et al*., 2021) [17].

A study conducted among school teachers in government sector in Colombo district using GPAQ revealed 19% of government teachers were in PAL, 28% in low PAL and 53% were in moderate PAL. Average value of the PAL was not significantly hanged with the civil status of the teachers. The PL of male teachers (1175 MET-min) was more than that of female teachers (961 MET-min) (Wickramarachchi *et al*, 2017) [28].

A study done in Sri Lanka to evaluate patterns of physical activity, the prevalence of physical inactivity and the relationships between physical activity and socio-demographic, clinical and biochemical parameters among Sri Lankan adults using IPAQ short form found 60% in the highly active category out of which 85.6% resided in rural settings while only 11% were in the inactive category. However, in the same study female gender, older age, urban living, Muslim ethnicity and tertiary education found to be significant predictors of physical inactivity (Katulanda *et al*. 2013) [14].

A systematic review conducted to assess physical activity pattern among South Asian adults revealed that skilled workers and professional female were more inactive than unskilled workers in the region (Ranasinghe., 2013) [14]. A study carried out in India among doctors and nurses found to be severely compromised. Gender, lack of time, laziness, climate and safety issues were identified as barriers for physical activity (George *et al*., 2021) [7].

A survey conducted to assess attitude towards physical activity among doctors and physical therapists ageing 24 to 35 years at three tertiary care hospitals in Karachi concluded that doctors and physical therapist are not performing planned structured physical activity (Khan *et al*.2013) [15].
A study carries out among registered nurses in London to assess physical activity and health behaviour showed 75% of the sample was engaging in personal physical activity. In the same study nearly 50% were found to be promoting physical activity in their clinical practice (Bakhshi *et al*., 2015) [4].
Systematic search carried out by Deakin University Australia to assess the on-shift physical activity of nurses revealed that during shifts nurses mostly engage in light physical activity, interspersed with moderate intensity tasks. Same study reported 58% of weekly physical activity among nurses was accumulated from on-shift physical activity (Ahresearch.com.au, 2017) [1].
A study conducted in Brazil to find out physical activity practice among undergraduate nursing students using IPAQ as the tool showed both freshmen and seniors were having predominantly sedentary pattern (Pires *et al*., 2013) [18].
A study conducted using IPAQ as the tool among nurses at Kanombe Military Hospital Ruwanda to find out the relationship between back pain and physical activity reported that nurses were having higher job related physical activity and lower leisure time activity. Age, marital status and working experience were significantly associated with the level of physical activity. (Lela and Frantz, 2012) [16].
A study conducted among registered nurses in California to find out leisure time physical activity showed 41% were engaging in regular aerobic physical activity and 57% performed regular muscle strengthening activity (Chin, Nam and Lee, 2016) [5].

## Chapter 3
## Methodology
### 3.1 Study design
This study was a hospital based descriptive cross-sectional study.

### 3.2 Study setting
Study setting was the National hospital for respiratory diseases (NHRD), Sri Lanka. It provides healthcare for patients with respiratory diseases such as tuberculosis, asthma and chronic obstructive airway disease, thoracic cancers and other chest pathologies. NHRD has a health education unit, and a nutrition unit. Large number of clients as out-patients and as in-patients are treated at NHRD. Study was conducted during July 2017 to April 2018 period.

### 3.3 Study population
Study population was government medical officers and Nursing offers in NHRD Welisara.
All government medical officers and nursing officers attached to NHRD Welisara for a minimum of 3 consecutive months were included to the study. Study subjects who were diagnosed with particular disease where physical activity is contraindicated or limited, as confirmed by the diagnosis card or the clinic book, pregnant, and up to 3months post-partum were excluded from the study.

### 3.4 Sample size
All the medical officers and nursing officers were included (n=250). There was not a special study sample.

### 3.5 Study Instruments
International Physical Activity Questionnaire (IPAQ) that has been tested in 12 countries including Sri Lanka to test the validity and reliability was used as a self-administered questioner. Additionally, it has reasonable measurement properties for monitoring population levels of physical activity among 18- to 65-yr-old adults in diverse settings (Craig *et al*. 2003) [6].

### 3.6 Method of data collection
A Self – administered questionnaire was used for data collection. Participants were recruited in their respective work setting on a time and date convenient for them. Privacy was maintained while they fill the questionnaire.

### 3.7 Data Collectors
Data collection was done by the principal investigator and the co-investigators.

### 3.8 Data analysis
Collected data were analysed with SPSS IBM version 20. Physical activity levels were categorised in to inactive (category 1), minimally active (category 2) and health enhancing physical activity (category 3). Percentage of each level of physical activity was given. Inferential statistics were used to describe associations between each level of physical activity and the variables; age category, sex, ethnicity, staff category and marital status. Moderate and high physical activity level were considered as satisfactory physical activity level and law physical activity level considered as unsatisfactory physical activity in this study.

### 3.9 Ethical considerations

Ethical approval was obtained from the Ethical review committee of Teaching Hospital - Kurunegala. The information sheet was given to them prior the study and explained the aim of the study, risk and benefits and guarantee the confidentiality of the responses. Informed written consent was obtained. Data were collected in a manner without disturbing the routine activities of the wards while maintaining privacy of the participants. Data were handled only by the investigators and stored under lock and key and in a password protected computer. Serial numbers were used when entering data to SPSS. All data ware used for analysis and finally the research will be published in a scientific local journal. All data and consent forms will be discarded after 2 years from publishing the research.

### 3.10 Administrative considerations

Administrative clearance was taken from the director of National Hospital for Respiratory Diseases Welisara before starting the study.

## Chapter 04

## Results

Total of 144 participants were enrolled for the study. Their demographic characteristics were as follows;

**Table 1:** Distribution of Socio-demographic characteristics

| Characteristics | Category | Number | Percentage |
|---|---|---|---|
| Gender | Male | 22 | 15.3% |
| | Female | 122 | 84.7% |
| Age group | 21-30 | 34 | 23.6% |
| | 31-40 | 69 | 47.9% |
| | 41-50 | 28 | 19.4% |
| | 51-60 | 13 | 9% |
| Marital status | Married | 112 | 77.8% |
| | Unmarried | 32 | 22.2% |
| Occupation | Medical officer | 37 | 25.7% |
| | Nursing officer | 107 | 74.3% |
| Race | Sinhalese | 136 | 94.4% |
| | Tamil | 8 | 5.6% |

Twenty-two (15.3%) were male and 122(84.7%) were female. Most of them were (47.9%) age between 31-40 years. Medical officer population was 37(25.7%) and Nursing officers consisted of 107(74.3%). Unmarried population was 32(22.2%) and 112(77.8%) were married. According to the race Sinhalese population was 136(94.4%) and 8(5.6%) were Tamils.

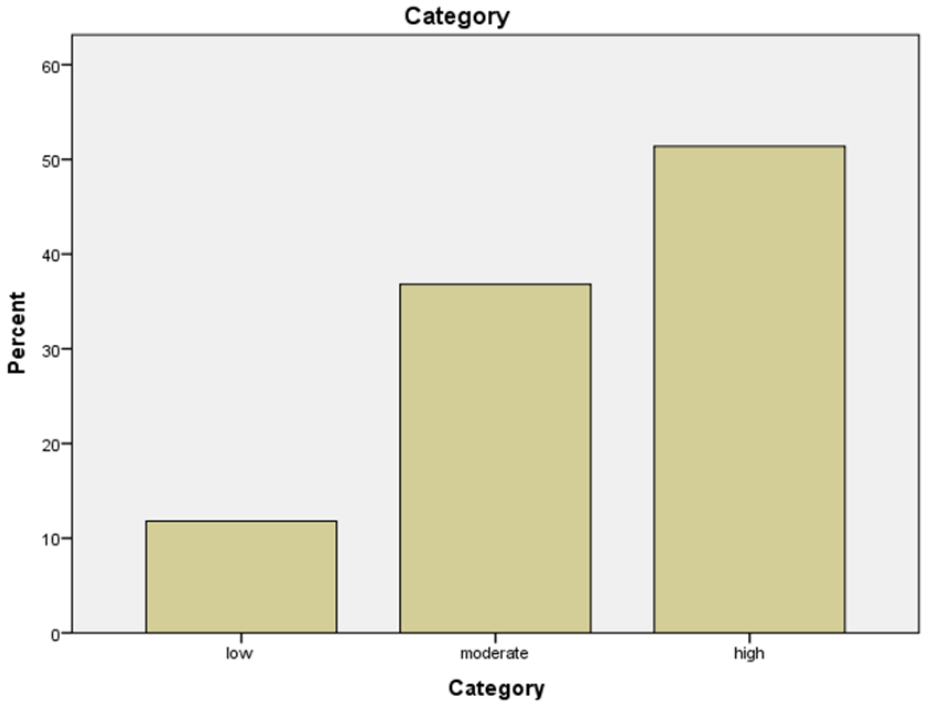


**Fig 1:** Distribution of Physical Activity level among Medical officers and Nursing officers

From the participants 17(11.8%) involved in low physical activity levels, 53(36.8%) had moderate physical activity level and 74(51.4%) had high physical activity level.

**Distribution of Physical Activity level according to the Gender**

Accordingly, among males 4(18.2%) involved in low physical activity level and 9(40.9%) each involved in both moderate and high physical activity level. In females 17(10.7%) involved in low physical level and 53(36.1%) had moderate level of physical activity and 74(53.3%) had high physical activity level. However, there was no statistical significant difference of physical activities between male and female groups.

**Distribution of Physical Activity level according to the Marital status**

In the married category, 14 (12.5%), 53 (34.8%) and 74 (52.7%) belong to low physical activity, moderate physical activity, and high physical activity groups respectively. However, this difference was not statistically significant.

**Distribution of Physical Activity level according to the Age**

According to the age category, in 21-30 age group 2(5.9%) belong to low, 12(35.3%) to moderate and 20(58.8%) to high physical activity levels. In 31-40 age group had 8(11.6%) in low, 22(31.9%) in moderate and 39(56.5%) in high physical activity level categories. In 41-50 age group 6(21.4%) had low, 10(35.7%) had moderate and 12(42.9%) had high physical activity levels. In 51-60 age group 1(7.7%) belong to low, 9(69.2%) to moderate and 3(23.1%) to high physical activity levels. Age category had a statistically significant effect on physical activity level.

**Distribution of Physical Activity level according to the Race**

**Table 2:** Age category association with physical Activity level

| | | | Category | | | Total |
|---|---|---|---|---|---|---|
| | | | **Low** | **Moderate** | **High** | |
| Age Categorie | 21-30 | Count | 2 | 12 | 20 | 34 |
| | | % within Age Categories | 5.9% | 35.3% | 58.8% | 100.0% |
| | 31-40 | Count | 8 | 22 | 39 | 69 |
| | | % within Age Categories | 11.6% | 31.9% | 56.5% | 100.0% |
| | 41-50 | Count | 6 | 10 | 12 | 28 |
| | | % within Age Categories | 21.4% | 35.7% | 42.9% | 100.0% |
| | 51-60 | Count | 1 | 9 | 3 | 13 |
| | | % within Age Categories | 7.7% | 69.2% | 23.1% | 100.0% |
| Total | | Count | 17 | 53 | 74 | 144 |
| | | % within Age Categories | 11.8% | 36.8% | 51.4% | 100.0% |

In Sinhalese group 17(12.5%) belonged to the low physical activity level and 48(35.3%) belonged to the moderate physical activity level. In the group 71(52.2%) had high physical activity level. Among Tamil participants 5(62.5%) and 3(37.5%) belonged to moderate physical activity level and high physical activity level respectively. However, there was no statistically significant difference between ethnic groups in physical activity levels.

**Distribution of Physical Activity level according to the Occupation**

According to occupation Medical officer category had 8(21.6%) in low physical activity level group, 19(51.4%) in moderate physical activity group, 10(27%) in high physical activity level group compared to Nurses who had 9(8.4%) in low, 34(31.8%) in moderate and 64(59.8%) in high physical activity level groups. There was a statistically significant difference in physical activity level according to the occupation.

## Chapter 05

## Discussion

Physical activity is defined as any voluntary bodily movement produced by skeletal muscles that require energy expenditure. It includes both exercise and incidental activity integrated into daily routine (Saridi *et al*., 2019) [21]. Regular physical activity not only improves an individual's health, fitness, and quality of life including mental well-being but also prevents major adverse health outcomes such as cardiovascular diseases, hypertension, type II diabetes and certain malignancies (Technical Report on Physical Activity and Sedentary Behaviour Guideline for Public Discussion in Sri Lanka MOH).

Hospitals are a special work environment that deals with infectious diseases, workers have a significant work overload, have limited leisure time and time for family activities during their free time due to shortage of staff. Medical officers and nursing officers are two main categories who work in a hospital under these situations. There the aim of this study was to assess the level of physical activity of this category in a Government Hospital.

It was carried out at the National Hospital for Respiratory Diseases, Welisara in Gampaha district. 107 nursing officers and 37 medical officers participated in the study.

This was a hospital based descriptive cross sectional study done to assess and describe the physical activity among medical officers and nursing officer with regards to several aspects.

When we consider the global situation physical activity within professional category varies according to geographical areas. In United States of America, the physical activity level among physicians and medical students was found to be more than the general population (Stanford *et al* 2011) however in the South Asian region physical activity level among professionals, females and skilled workers was found to be less than unskilled workers (Ranasinghe CD 2011).

This study revealed that the majority of participants (88.2%) had satisfactory level of physical activities. The level of physical activity was not significantly varied according to gender, marital status or ethnicity.

According to our study 78.4% (29) of medical officers had satisfactory level of physical activity while 91.6% (98) nursing officers had satisfactory level of physical activity. Therefore, the current study showed a statistically significant difference among professional categories.

Although our study showed a comparatively significant satisfactory level of physical activity among medical officers, globally different results have been observed. According to a study done in Bahrain, only 29% of primary care physicians were engaged in adequate leisure time physical activity (Bahram *et al*. 2003) [3]. Even though majority of Medical officers in this study had moderate physical activities, a study conducted among Estonian family doctors showed 95% of female family doctors are physically active (Suija *et al*. 2010) [12]. But a survey conducted in Karachi concluded that midcareer doctors are not performing planned structured physical activity (Khan *et al*.2013) [15]. Also a study conducted in Riyadh concluded 68.4% of physicians had low level of physical activity (Reshidi 2014).

In our study nursing officers had high satisfactory physical activity level. Most of the studies done in several countries had similar results. A study conducted among nurses at Kanombe Military Hospital Ruwanda reported that nurses were having higher job related physical activity and lower leisure time activity (Lela and Frantz, 2012) [16]. But a cross sectional study conducted in Brazil showed both freshmen and seniors among undergraduate nurses were having predominantly sedentary pattern (Pires *et al*., 2013) [18]. A similar study among registered nurses in London 75% of the sample was engaging in personal physical activity (Bakhshi *et al*., 2015) [4]. Also, a cross sectional study conducted among registered nurses in California showed 41% were engaging in regular aerobic physical activity and 57% performed regular muscle strengthening activity (Chin, Nam and Lee, 2016) [5].

According to our study statistically significant difference was observed among age categories. But a study conducted among Estonian family doctors, analysis revealed no statistically significant relationship between the level of physically activity and age (Suija *et al*. 2010) [12]. Another study conducted among nurses at Kanombe Military Hospital Ruwanda reported that age was significantly associated with the level of physical activity (Lela and Frantz, 2012) [16].

Present study showed a statistically significant difference among age groups and physical activity levels. Similar result has been observed in a Military hospital Ruwanda (Lela and Frantz, 2012) [16]. However, in Estonia, such a relationship was not found. Therefore, culture of the working environment may influence the physical activity of the staff members (Rinaidi, Miles, *et al* -2016).

Since a highly validated IPAQ questionnaire will be used and questionnaire will be answered by a knowledgeable sample, high quality of the data is expected. Cross sectional study design is the main limitation in this study.

## Chapter 06

## Conclusion and Recommendations

Majority of participants, 88.2% had moderate or high level of physical activity. The level of physical activity has not varied significantly by gender, marital status or ethnicity. However, statistically significant difference was observed among age categories and professional categories.

It is necessary to identify the factors associated with low physical activity level. Also it is necessary to consider associated factors and their age when advising on physical activity.

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