

Physical activity practices of final year medical students in a population with high burden of non-communicable diseases- survey of University of Zimbabwe students.

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Abstract- Background: There is a growing prevalence of non-communicable diseases worldwide. Addressing physical inactivity among other the risk factors becomes important in controlling these diseases. Medical students during the time of training and after completion of studies will also be involved in the modification of health lifestyles through patient education.

Objectives: The purpose of the study was to determine final year medical students' physical activity practices, self-reported benefits and recommendations in promoting physical activity during their period of training.

Methods: A cross-sectional descriptive study was done using self-administered questionnaires and some of the questions were adopted from the Exercise Benefits/Barriers Scale. Questionnaires were distributed to 109 final year medical students who were selected by stratified random sampling.

Results: The mean age of the students was 23 years (SD=1.47) with most of the students being in the age category of 22-24 years (77.1%). The majority of the students (more than 50%), both females and males indicated that they participate in physical activities very often. The type of physical activities which the students participated in were athletics in 33 (61.1%) of the females and ball games in 30 (54.6%) of the males, making use of the campus facilities. Students indicated prevention of heart attacks (93.6%) and improvement in cardiorespiratory functioning (93.6%) as their greatest perceived benefit of taking part in physical activity. Lack of time (73.4%) was the main barrier to physical activity. Students mainly recommended for provision of gym facilities (26.3%) and physical education slot on timetable (22.9%).

Conclusion: Students recommended for the provision of gym facilities and physical education slot on timetable in order to increase levels of physical activity during medical school training. With these in place, students will be at a better position to counsel patients with regards to physical activity.

Index Terms- physical activity, medical students, benefits, barriers, non-communicable diseases

I. INTRODUCTION

There is a growing prevalence of non-communicable diseases (NCDs) across both developed and developing countries worldwide and global strategy on diet, physical activity and health with the aim of reducing risk factors associated with

NCDs through increasing overall awareness on preventative interventions has been launched (WHO 2013). Physical activity refers to all bodily movements that lead to energy expenditure (Moss 2012). Regular physical activity can play a pivotal role in the prevention and treatment of cardiovascular disease (CVD), hypertension, non-insulin dependent diabetes, diabetes mellitus, obesity, stroke, some cancers, and osteoporosis (WHO 2004). "Medical school faculty members should set a good example by practicing a healthy lifestyle and health professionals should exercise, not only to benefit their own health but also to make their endorsement of an active lifestyle more credible" (Frank et al. 2008). Doctors, nurses, and other health professionals are uniquely positioned to deliver effective messages and advice about the importance of changing some lifestyle factors in order to achieve and maintain good health. Incorporating advice into normal consultations is deemed the most feasible form of lifestyle physical activity promotion in health care delivery (Shirley et al. 2010). Physical inactivity and weight gain has been noted in middle-aged populations immediately after high school (Irwin et al. 2007). Encouraging students to eat a healthily and engage in recommended levels of physical activity plays a key role in reducing the long-term morbidity and mortality associated with being overweight or obese and leading an inactive lifestyle (Flegal et al. 2002).

In Zimbabwe, NCDs are estimated to account for 31% of total deaths and the probability of dying prematurely as a result of NCDs is at 19% (WHO 2013). The main risk factors associated to these NCDs were increased tobacco smoking (12%), alcohol consumption (16%), raised blood pressure (30.9%) and obesity (7%) (WHO 2013). Looking at the risk factors, they are all modifiable risks factors which can be addressed through lifestyle changes. There has been limited documentation on the physical activity practices of the medical students in Zimbabwe and their role in promoting physical activity as a measure to decrease the high prevalence of NCDs. The assumption is that medical students have knowledge on the importance of physical activity so an understanding of their attitudes towards physical activity will determine their participation in the promotion of physical activity when they qualify as health professionals. Therefore the aim of the study was to determine the practices and perceived benefits of physical activity by the medical students and also to elaborate on the barriers faced and any recommendations in regard to physical activity promotion during their training period as health professional with an overarching goal of health promotion.

II. METHODS

Study design and Study Procedures

A cross sectional study was carried out at the University Of Zimbabwe College Of Health Sciences. The medical school is the largest of the four medical schools in the whole country. The programmes offered at the medical school include the two five year degree programmes which are Bachelor of Medicine and Surgery (MBChB) and Bachelor of Dental Surgery (BDS), whilst the rest are four year degree programmes. These include: Bachelor of Pharmacy Honours (HPM), Bachelor of Medical Laboratory Sciences Honours Degree (HBMLS), Bachelor of Science Honours Degree in Occupational Therapy (HOT), Bachelor of Science Honours Degree in Physiotherapy (HPT), Bachelor of Science Honours Degree in Nursing Science (BSc N Hons), Bachelor of Health Education and Promotion (HEP) and Bachelor of Science Honours Degree in Radiography (Diagnostic) (HRD). The study was approved by the Medical Research Council of Zimbabwe (MRCZ/B/744), Joint Research Ethics Committee (JREC: 280/14) and the Dean of the College of Health Sciences.

According to the Dean of College of Health Sciences, there were 293 final year medical students in the 2014-2015 academic year. The minimum sample size to show Exercises benefits/ barriers for the survey was calculated based on the total population (n=293), at 90% confidence level and a margin error of 5% was 109 (Epi Info Version 7.1.5.0). Final year students were selected because they are about to qualify and they are expected to be equipped with knowledge on the promotion of physical activity as part of their roles in health promotion. Final year students at the medical school were recruited through stratified random sampling, with the different programs being the strata. Proportionate sampling was done to the different programs so as to recruit a representation of the number of students according to the programs. Students were excluded if they were absent from school.

Data collection

Based on the specific objectives, the questionnaire was developed using some of the questions adopted from the Exercise Benefits/Barriers Scale by Sechrist et al. (1987). The questionnaire used in the current study had three sections. Section A of the questionnaire collected the demographic data of the students which included the program of study, sex and age. Section B collected information on student's knowledge, beliefs, behaviors, perceived benefits and barriers towards physical activity. The physical activity practices of the medical students were documented in section C of the questionnaire. The

questionnaire was made up of closed and open-ended questions. The closed ended questions were rated on a 5-point Likert scale to measure either agreement or frequency.

Data collection was done between January 2015 and February 2015 which is in the second semester of the 2014-2015 academic year. The list of the students was collected from the Dean's Office, University of Zimbabwe College of health Sciences.

Questionnaires were distributed to the students in their respective lecture rooms through stratified random sampling and the questionnaires were administered to the selected students and they were collected at the same day. The distribution of questionnaires was done just after lectures or during their free time. The purpose of the study was explained to all students and consent forms were given to students before filling in the questionnaires.

For the purpose of analysis, the programmes were grouped according to the profession role. Medicine group comprised MBChB and BDS students and Diagnostics group consisted of HRD and HBMLS. HPT and HOT made up the Rehabilitation group whilst the other three programmes, HPM, HEP and Nursing were left as stand-alone programmes.

Statistical Analysis

The quantitative data was coded in Excel and entered in Stata (Version 13) software programs for data analysis. Frequencies, measures of central tendency i.e. mean and standard deviation were computed for all the numerical data. All tests were performed at .05 level of significance. For the open ended questions, the responses were categorized into common themes for the purpose of analysis and the responses were analysed as frequencies and percentages.

III. RESULTS

The response rate was 100% as all the 109 final year students agreed to participate and complete the questionnaires provided. The mean age of the students was 23 years (SD=1.47) with most of the students being in the age category of 22-24 years (77.1%). Majority of the students were from Medicine making up 35.8% of the sample (Table 1). The majority of the students (more than 50%), both females and males indicated that they participate in physical activities very often. The type of physical activities which the students participated in were athletics in 33 (61.1%) of the females and ball games in 30 (54.6%) of the males, making use of the campus facilities

Table 1: Demographic data, physical activity practices and availability of resources

Age in years, mean (SD)	23.4 (±1.47)
Gender, Males n(%)	55(50.5)
Program of study, n(%)	
Diagnostics	16 (14.7)
Health promotion	7 (6.4)
Medicine	39 (35.8)
Nursing	11 (10.1)

	Female (n=54)	Males (n=55)
Pharmacy		19 (17.4)
Rehab		17 (15.6)
Physical Activity Practices		
Frequency of PA, n(%)		
Rarely	15 (27.8)	18(32.7)
Very Often	39 (72.2)	37(67.3)
Facilities used for Physical Activities, n(%)		
Church	0	1(2.1)
Public sports area	11(24.5)	7(14.9)
Campus	19(42.2)	31(66.0)
Home	15(33.3)	8(17.0)
Type of Physical Activities, n(%)		
None	9 (16.7)	7(12.3)
Ball	7(13.0)	30(54.6)
Athletics	33(61.1)	11(20.0)
Gym	4(7.4)	3(5.5)
Swimming	1(1.9)	3(5.5)
Indoor	0	1(1.8)

Knowledge and perceptions of the benefits of physical activity among students

Students indicated prevention of hypertension (90.8%), prevention of heart attacks (93.6%) and improvement in cardiorespiratory functioning (93.6%) as their greatest perceived benefit of taking

part in physical activity. There was an association between the perceived benefit of physical activity and gender, with males agreeing to exercise improving endurance performance (92.7%) while females agreed to exercise allowing them to carry out normal activities without getting tired (75.9%) (Table 2).

Table 2: Knowledge and perceived benefits of exercises (n=109)

Perceived benefit	Disagree (n, %)	Neutral (n, %)	Agree (n, %)	Tests
Exercising improves my endurance in performing my daily activities	7(6.4)	10(9.2)	92(84.4)	$X^2= 5.964$, $df=2, p=.05$
Exercising makes my mood better in general	9(8.3)	32(29.4)	68(62.4)	
Exercising helps me feel less fatigued	30(27.5)	48(44.0)	31(28.4)	
Physical activities make my muscles feel stronger	5(4.6)	18(16.5)	86(78.9)	$X^2= 4.905$, $df=2, p=.08$
Exercising gives me a sense of personal accomplishment	18(16.5)	35(32.1)	56(51.4)	
Physical activities improve my mental health and make me more alert mentally	5(4.6)	34(31.2)	70(64.2)	
Physical activities help to strengthen my bones	2(1.8)	17(15.6)	90(82.6)	
Physical activities will keep me from having high blood pressure	2(1.8)	8(7.3)	99(90.8)	
Physical activities improves functioning of my cardiovascular system and the prevention of heart attacks	2(1.8)	5(4.6)	102(93.6)	
Physical activity help me sleep better at night	14(12.8)	37(33.9)	58(53.2)	$X^2= 10.404$, $df=2, p=.001$
I will live longer if I engage in physical activities	8(7.3)	29(26.6)	72(66.1)	
Physical activity allows me to carry out normal activities without getting tired	11(10.1)	42(38.5)	56(51.4)	$X^2= 7.262$, $df=2, p=.02$
Physical activity makes my body look good	4(3.7)	23(21.1)	82(75.2)	

Beliefs to physical activity among students

The beliefs to physical activity which were highlighted by the students included the following;

promoting physical activity to be important (86.2%), students benefiting from health and physical activity classes (67.0%) (Table 3).

Table 3: Beliefs to physical activity by students (n=109)

Perceived barrier	Disagree n(%)	Neutral n(%)	Agree n(%)
Exercise takes too much of my time to perform my academic work	47(43.1)	21(19.3)	41(37.6)
Exercise takes too much time for my family responsibilities	64(58.7)	33(30.3)	12(11)
Exercise takes too much time for my social activities	61(56.0)	35(32.1)	13(11.9)
Exercising tires me	23(21.1)	22(20.2)	64(58.7)
Exercise is hard for me	34(31.2)	24(22.0)	51(46.8)
Places for me to exercise are too far away	48(44.0)	33(30.3)	28(25.7)
There are too few places for me to exercise	48(44.0)	29(26.6)	32(29.4)
It costs too much to exercise	57(52.3)	25(22.9)	27(24.8)
I don't know the benefits of engaging in physical activity	87(79.8)	14(12.8)	8(7.3)
I will benefit from health and physical education classes	10(9.2)	26(23.9)	73(67.0)
I prefer taking a taxi to walking to town or walking in town	48(44.0)	27(24.8)	34(31.2)
Do you think promotion of physical activity is important	7(6.4)	8(7.3)	94(86.2)

Barriers to physical activity

Lack of time (73.4%) was the main barrier to physical activity and students also highlighted lack of

motivation (56.0%) and study overload (56.9%) to be the other barriers to physical activity participation (Table 4)

Table 4: Barriers to physical activity (n=109)

Perceived barrier	Disagree	Neutral	Agree
Lack of interest	42(38.5)	24(22.0)	43(39.4)
Lack of time	15(13.8)	14(12.8)	80(73.4)
Lack of physical education	31(28.4)	28(25.7)	50(45.9)
Lack of motivation	25(22.9)	23(21.1)	61(56.0)
Study overload	20(18.3)	27(24.8)	62(56.9)
Availability of video games	74(67.9)	20(18.3)	15(13.8)
Expensive exercise facilities	43(39.4)	35(32.1)	31(28.4)
Inaccessibility of exercise facilities	39(35.8)	35(32.1)	35(32.1)
I prefer watching sports to participating in them	35(32.1)	41(37.6)	33(30.3)
I think people in exercise clothes look funny	79(72.5)	11(10.1)	19(17.4)
Exercise facilities do not have convenient schedules for me	28(25.7)	24(22.0)	57(52.3)
My colleagues don't encourage me to engage in physical activities	41(37.6)	20(18.3)	48(44.0)
I enjoy doing physical activities	37(33.9)	29(26.6)	43(39.4)

Students' recommendations to improve physical activity

Students mainly recommended for provision of gym facilities (26.3%) and physical education slot on timetable (22.9%) (Table 5)

Table 5: Students recommendations to improve physical activity during training (n=109)

Recommendation	Frequency, n(%)
Availability of gym facilities to students	31(26.3)
Physical activity awareness	10(8.5)
Physical education slot on timetable	27(22.9)
Sport competitions	15(12.7)

IV. DISCUSSION

With the increase in the burden of the NCDs in our country, it is of paramount importance for the population to look for strategies to lessen the burden and this can be done through targeting the modifiable risk factors. Lifestyle changes which include physical activity, monitoring diet and quitting smoking and alcohol, have been recommended to be the major steps in fighting the burden and the patients can only be aware of this if the information is disseminated to them. It becomes very important for the medical professionals to be the advocators of lifestyle changes with risk factors for the NCDs as part of the health care service delivery. However, it has been reported that medical students who are good advocators for physical activity have shown to also regularly practice in physical activity and have good attitude towards it (Lobelo et al. 2008). To our knowledge, even though the burden of the NCDs in Zimbabwe has been reported to be high, no study has been done to determine the physical activity practices of medical students during training in order to prepare them to be advocators for physical activity when practising.

The majority of the students in the current study highlighted that they very often participate in physical activity for different reasons. The most perceived benefits of participating in physical activity were prevention of hypertension, prevention of heart attacks and improvement in cardiorespiratory functioning by the students in our study. Similar benefits were reported in studies done in other studies. This finding might be as a result of exposure of students to lectures, medical media and sites that emphasize on the importance of physical activity (El-Gilany & El-Masry 2011). In other studies the main motives were preventive health, social interaction, psychological outlook, stress reduction and entertainment (Ebben et al. 2008; Lovell et al. 2010). Different perceived benefits were noted in a study done in Egypt and United Kingdom which were mainly weight control, improving muscle power, maintaining body shape and health promotion ((El-Gilany & El-Masry 2011). This trend is related to growing incidences of obesity and being overweight in these countries so exercising as a way of keeping up a good body shape and weight loss will be likely to be more evident compared to Zimbabwe where obesity seems not to be a big problem.

The main perceived barrier to physical activity from this study was lack of time. This is the same in studies done by Fox et al. (2012) and Dabrowska-galas et al. (2013) where lack of time was the main barrier among others like study overload, lack of social support and pain and exertion. In a study done to assess physical fitness in Physiotherapy students, it was reported that the fitness was unsatisfactory and this was due to the sedentary life style and lack of sporting activities & also over emphasis on academic pursuits (Parmar & Modh 2015). The possible reason is that the timetable during the week for students at the College of Health Sciences does not offer time for participation in sport activities like what other universities do making it difficult for them to participate in physical activities during the week. After school hours priority is given mainly to studying more than participation in physical activity. This is supported by Ángyán et

al. (2003) who reported that this trend is mainly because of high workloads, less free time, lack of interest and failure to appreciate the practicality or usefulness of physical activity. Busy lesson schedules and a lot of studying was also noted to mainly affect medical students compared to other university students in another study (Ángyán et al. 2003). Although the program is very demanding, it should be considered too that the students should have time to practice in physical activity and this will result in lowering the stress levels during training. In a review done by Irwin (2004), it was reported that women, and especially African-American women, are among the least active students, and students living off-campus are more active than those on-campus yet insufficient activity has been seen to be a serious health concern among university students. Women are mostly affected by lack of physical activity and hence the need to emphasise this at any level. In a study by Kimm et al. (2002), they reported a precipitous drop in levels of activity during adolescence among both black girls and white girls, and the drop was particularly marked among black girls. Promotion of adequate PA habits during medical education may be an important step to improve the PA preventive counseling that future clinicians provide (Frank et al. 2008).

Students from the current study recommended for adjustment of timetables as well as provision of free gym facilities, more activities that promote physical activity awareness, exercise trainers, physical education slots on timetable and sporting competitions between universities to be encouraged. This was consistent with the what was reported in other studies (Ángyán et al. 2003, El-Giyany et al. 2011, Askarian et al. 2013). A few students took part in gym classes because of the low availability of free gym facilities and a few are willing to pay for these facilities. This was supported by a study by Dwyer et al (2013) where high costs of purchasing gym memberships and sports equipment affected the participation in gym activities. These recommendations have to be taken into consideration for the overarching goal of decreasing the burden of NCDs in the country. Medical schools need to increase the proportion of students adopting and maintaining regular PA habits to increase the rates and quality of future PA counselling delivered during clinical practice (Lobelo et al, 2008)

V. CONCLUSION

Students believed that promotion of physical activity was important. Lack of time was the main barrier to physical activity and students believed that they will benefit from physical education slots on timetable. Students expressed their knowledge on the issue that physical activity is important in the prevention of hypertension, heart attacks and improvement in cardiorespiratory functioning. Most of the students occasionally participated in physical activities thereby indicating a positive attitude towards physical activity. Majority of students utilized campus facilities while others used home facilities. Students mainly recommended for provision of gym facilities and physical education slots on timetable. There is need for provision of a variety of physical activity facilities and more programs to

promote physical activity awareness and trained personnel to assist with these activities for proper exercising and how to perform them effectively.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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