

# AWARENESS ABOUT EFFECT OF PHYSICAL ACTIVITY IN CONTROLLING SYSTEMIC DISEASE AMONG DENTAL STUDENTS: A SURVEY

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## ABSTRACT:

The aim of this study is to get awareness about the benefits of physical activity and its effect on dental students. Recently, it has been recognized that lack of physical activity, especially regular stretching of arms and legs, may affect the course and pathogenesis of a number of systemic diseases such as cardiovascular disease, bacterial pneumonia, diabetes mellitus and low birth weight. The purpose of this study is to get awareness about the importance of physical activities and their benefits during the busy schedule of dental students. Dentistry is a field of challenges, especially the health of a budding dentist must be on top priority. A well maintained body is equal to a peaceful mind and it can be attained only through exercise. A cross sectional questionnaire survey was conducted. A total of 104 people of Saveetha Dental College were made to answer all the questions. The result will be analyzed using statistical analysis.

In this study, it was found that 90% are aware of the effect of physical activity to control systemic disease and only 14% are not aware of the statement. It has been proven that physically active individuals gain less weight over time and maintain good health. Thus infrastructure improvements such as sports activity in colleges among faculties, combined with regular exercise provide additional physical activity that would help to reduce obesity and non-communicable diseases in the future.

**KEYWORDS:** dental students; exercise; health; physical activity; sports; systemic disease.

## INTRODUCTION:

Philosophers and physicians such as Plato and Hippocrates believed in the relationship between physical activity and health and the lack of physical activity and disease (Álvarez-Bueno *et al.*, 2017). Today's lifestyle should always be associated with physical activities to reduce the risk of conditions such as cardiovascular disease, type 2 diabetes osteoporosis and cancer. Once the disease has set in, physical activity often has peripatetic and secondary preventive effect

Unfortunately, the potential has not been fully understood that most people purchasing teaching faculties benefited from regular exercise who lead a sedentary lifestyle (Cheung *et al.*, 2019).

There is increasing evidence that physical activity is associated with altered risk for certain specific types of cancer, especially colon and prostate (Cheung *et al.*, 2019; Doherty and Miravalles, 2019). The physical

health benefits of regular physical activity are well established and regular participation in such activities is associated with longer and better quality of life (Harsha and Berenson, 1995). There are a lot of literatures showing that inactivity is one of the most significant causes of reduced quality of life, disability and death in the developed world.

Hypertension is the most common risk factor for heart disease, stroke and renal disease and has been identified as a leading cause of mortality (Howie and Pate, 2012). Type 2 diabetes is a worldwide problem with significant health, social and economic implications. Diabetes results from a complex interplay of environment and genetic components. There is strong evidence that such modifiable risk factors as obesity and physical inactivity are the main non genetic determinants of the disease (Pate *et al.*, 2019). Currently diabetes treatments can help control hyperglycemia and slightly reduce diabetic complications. Stroke is the third leading cause of death in Canada, where 5.5% of all deaths are due to cerebrovascular disease (Pituk and Cagas, 2019). Physically inactive people have a significantly elevated stroke risk. Cancer is preventable to some extent and shares common risk factors such as poor nutrition, obesity, inflammation and physical inactivity (Singh, 2012).

The aim of this study is to get awareness about the benefits of physical activity and its effect on dental students.

#### **MATERIALS AND METHOD:**

A self-constructed questionnaire was created whose validity was checked in standard methods using the online platform "Google Forms". The questionnaire was used to record responses of participants. Total of 104 people from Saveetha Dental College were made to answer all the questions. The purpose of study was explained to the participants who took the survey, analysis were made using SPSS software version 23.0 and to check the association Chi square analysis was done. The data were analysed using SPSS software for knowing the mean, median and frequency of responses. The sample for the study consisted of 23 questions, out of which 21 questions were multiple choice questions.

#### **RESULTS & DISCUSSION:**

In the present study, shows that 88.35% of the population are aware of the effect of physical activity to control disease and 11.65% do not agree with the above statement (Fig 1). 39.62% of the people believe that more exercise can decrease ischemic injury leading to cardioprotection. 26.42% do not agree to the above statement (Fig 2). 30.39% of the respondents are aware that at least 150 minutes of moderate activity can prevent heart attack. 25.49% of the students are not aware of the statement (Fig 3). 50.49% of the dental students are aware about exercise reducing systolic pressure by 3-4mmHg, lesser chances of heart stroke. 29.13% are reluctant to exercise reducing the chances of heart stroke (Fig 4)

34.31% of the population are aware on diabetes being controlled by diet and exercise, whereas 25.49% are not agreeing to diabetes being controlled (Fig 5). 47.57% of the people are aware about the statement that statement that more physical activity can delay chances of being diagnosed by type 2 diabetes and 28.16% deny to it (Fig 6). 33.01% of the students gave positive to awareness on aerobic exercise controlling diabetes, whereas 22.33% showed negative response to the above statement (Fig 7). 47.57% of the population did know about the fact that regular exercise can maintain blood pressure below 130/80 mmHg. 16.50% deny the statement (Fig 8). 23.30% are aware about the importance of stretching arms and legs to prevent hypertension, 20.39% are not aware about the importance of regular exercise (Fig 9). 56.85% of the dental students have knowledge about exercise bicycle to strengthen immune system, whereas 20.59% of the students are not exposed to knowledge about exercise bicycle (Fig 10)

Similar studies were done by other researchers from different regions of the world. Few studies show that, The physical and psychological benefits of physical activity are well documented and are highlighted in the Chief Medical Officer's report which recommends at least 30 minutes of moderate intensity physical activity a day (Sukys *et al.*, 2019). It is recognized that the growing epidemic of obesity is linked to recent

decline in physical activity levels (Taylor, 2014). Our study has found that medical colleges, especially in the teaching field, provide a less physical activity environment (Taylor, 2014; Ariga *et al.*, 2018). Most of the faculties were using cars and bikes for their regular travel and not involved in any sports activity (Taylor, 2014; Jyothi *et al.*, 2017; Ariga *et al.*, 2018). This indicates that faculties are sedentary or moderate workers and there is increased risk of non-communicable diseases in these persons (Duraishamy *et al.*, 2019). Determination of Correlation of Width of Maxillary Anterior Teeth using Extraoral and Intraoral Factors in Indian Population (Ariga *et al.*, 2018).

Maintaining the normal weight involves a good physical activity, in combination with dietary changes (Basha, Ganapathy and Venugopalan, 2018). This has been proved by an study which states that an activity such as normal walking of more than 9000 daily steps, is associated with a lower likelihood of being obese (Selvan and Ganapathy, 2016; Basha, Ganapathy and Venugopalan, 2018). In addition to the importance of a physical activity professional's potential influence on others as a model, engaging in a physically active lifestyle is very important for personal reasons (Ganapathy, 2016). There are studies that show that participation in organized fitness programs (e.g., corporate fitness programs) results in greater productivity, reduced absenteeism, lower health care costs, and greater job satisfaction among employees (Subasree, Murthykumar and Dhanraj, 2016). So the college or the universities have to evolve the program which involves more physical activity such as regular sports competition for the faculties (Ranganathan, Ganapathy and Jain, 2017). The persons who are in the dental profession will also look into other ways of fitness, such as regular exercise and using traditional methods such as walking when there is no need for transport vehicle's (Vijayalakshmi and Ganapathy, 2016; Ranganathan, Ganapathy and Jain, 2017). Social class is thought to have a bearing on physical activity (Ganapathy, Kannan and Venugopalan, 2017). The Whitehall II study showed that people in a lower social class do less physical activity than those in higher social classes or grades of employment (Hacken and ten Hacken, 2009). This was not seen in our case as all the study subjects were from higher class. Achieving and maintaining a health-enhancing level of physical fitness is one of the basic standards for good teaching and maintaining good health (Hacken and ten Hacken, 2009; Harold W. Kohl *et al.*, 2013). Physical activity in professionals leads to both personal health benefits, and improves job satisfaction (Hacken and ten Hacken, 2009; Harold W. Kohl *et al.*, 2013; Phan *et al.*, 2018).

Chronic diseases are major killers in the modern era. Physical inactivity is a primary cause of most chronic diseases (Hacken and ten Hacken, 2009; Harold W. Kohl *et al.*, 2013; Reiner *et al.*, 2013; Phan *et al.*, 2018). The initial third of the article considers (Jain and Dhanraj 2016): activity and prevention definitions; historical evidence showing physical inactivity is detrimental to health and normal organ functional capacities (Prakash *et al.* 2019); cause vs. treatment (Watson *et al.*, 2017); physical activity and inactivity mechanisms differ; gene-environment interaction [including aerobic training adaptations, personalized medicine, and co-twin physical activity]; and specificity of adaptations to type of training (West *et al.*, 2019).

## **CONCLUSION:**

The findings of our study suggest a detailed link between physical inactivity and systemic diseases. Within the limitations of the study, it can be concluded that this study adds our understanding towards the importance of physical activity. The level of awareness and practice about the relationship of systemic disease and physical activity connections was moderate among the study sample, as dental students have more knowledge, they showed better awareness and practice.

## **AUTHOR CONTRIBUTIONS:**

All the authors contributed equally in concept, design, carrying out the research and analysis of the study.

## **CONFLICT OF INTEREST:**

The authors have none to declare.

## REFERENCES:

- [1] Álvarez-Bueno, C. et al. (2017) 'Academic Achievement and Physical Activity: A Meta-analysis', *Pediatrics*, 140(6). doi: 10.1542/peds.2017-1498.
- [2] Ariga, P. et al. (2018) 'Determination of Correlation of Width of Maxillary Anterior Teeth using Extraoral and Intraoral Factors in Indian Population: A Systematic Review', *World Journal of Dentistry*, pp. 68–75. doi: 10.5005/jp-journals-10015-1509.
- [3] Basha, F. Y. S., Ganapathy, D. and Venugopalan, S. (2018) 'Oral Hygiene Status among Pregnant Women', *Research Journal of Pharmacy and Technology*, p. 3099. doi: 10.5958/0974-360x.2018.00569.3.
- [4] Cheung, P. C. et al. (2019) 'Elementary school physical activity opportunities and physical fitness of students: A statewide cross-sectional study of schools', *PLOS ONE*, p. e0210444. doi: 10.1371/journal.pone.0210444.
- [5] Doherty, A. and Miravalles, A. F. (2019) 'Physical Activity and Cognition: Inseparable in the Classroom', *Frontiers in Education*. doi: 10.3389/educ.2019.00105.
- [6] Duraisamy, R. et al. (2019) 'Compatibility of Non Original Abutments With Implants', *Implant Dentistry*, pp. 289–295. doi: 10.1097/id.0000000000000885.
- [7] Ganapathy, D. (2016) 'Effect of Resin Bonded Luting Agents Influencing Marginal Discrepancy in All Ceramic Complete Veneer Crowns', *JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH*. doi: 10.7860/jcdr/2016/21447.9028.
- [8] Ganapathy, D. M., Kannan, A. and Venugopalan, S. (2017) 'Effect of Coated Surfaces influencing Screw Loosening in Implants: A Systematic Review and Meta-analysis', *World Journal of Dentistry*, pp. 496–502. doi: 10.5005/jp-journals-10015-1493.
- [9] Hacken, N. H. T. T. and ten Hacken, N. H. T. (2009) 'Physical Inactivity and Obesity: Relation to Asthma and Chronic Obstructive Pulmonary Disease?', *Proceedings of the American Thoracic Society*, pp. 663–667. doi: 10.1513/pats.200907-070dp.
- [10] Harold W. Kohl, I. I. I. et al. (2013) *Physical Activity, Fitness, and Physical Education: Effects on Academic Performance*. National Academies Press (US).
- [11] Harsha, D. W. and Berenson, G. S. (1995) 'The Benefits of Physical Activity in Childhood', *The American Journal of the Medical Sciences*, pp. S109–S113. doi: 10.1097/00000441-199512000-00019.
- [12] Howie, E. K. and Pate, R. R. (2012) 'Physical activity and academic achievement in children: A historical perspective', *Journal of Sport and Health Science*, pp. 160–169. doi: 10.1016/j.jshs.2012.09.003.
- [13] Jyothi, S. et al. (2017) 'Periodontal Health Status of Three Different Groups Wearing Temporary Partial Denture', *Research Journal of Pharmacy and Technology*, p. 4339. doi: 10.5958/0974-360x.2017.00795.8.
- [14] Pate, R. R. et al. (2019) 'Change in Children's Physical Activity: Predictors in the Transition From Elementary to Middle School', *American Journal of Preventive Medicine*, pp. e65–e73. doi: 10.1016/j.amepre.2018.10.012.
- [15] Phan, D.-V. et al. (2018) 'A Study of the Effects of Daily Physical Activity on Memory and Attention Capacities in College Students', *Journal of Healthcare Engineering*, pp. 1–9. doi: 10.1155/2018/2942930.
- [16] Pituk, C. S. and Cagas, J. Y. (2019) 'PHYSICAL ACTIVITY AND PHYSICAL FITNESS AMONG FILIPINO UNIVERSITY STUDENTS', *Journal of physical education*. Universidade Estadual de Maringá, 30. doi: 10.4025/jphyseduc.v30i1.3076.

- [17] Ranganathan, H., Ganapathy, D. M. and Jain, A. R. (2017) 'Cervical and Incisal Marginal Discrepancy in Ceramic Laminate Veneering Materials: A SEM Analysis', *Contemporary clinical dentistry*, 8(2), pp. 272–27
- [18] Reiner, M. et al. (2013) 'Long-term health benefits of physical activity--a systematic review of longitudinal studies', *BMC public health*, 13, p. 813.
- [19] Selvan, S. R. and Ganapathy, D. (2016) 'Efficacy of fifth generation cephalosporins against methicillin-resistant *Staphylococcus aureus*-A review', *Research Journal of Pharmacy and Technology*, p. 1815. doi: 10.5958/0974-360x.2016.00369.3.
- [20] Singh, A. (2012) 'Physical Activity and Performance at School', *Archives of Pediatrics & Adolescent Medicine*, p. 49. doi: 10.1001/archpediatrics.2011.716.
- [21] Subasree, S., Murthykumar, K. and Dhanraj (2016) 'Effect of Aloe Vera in Oral Health-A Review', *Research Journal of Pharmacy and Technology*, p. 609. doi: 10.5958/0974-360x.2016.00116.5.
- [22] Sukys, S. et al. (2019) 'Reasons and Barriers for University Students' Leisure-Time Physical Activity: Moderating Effect of Health Education', *Perceptual and motor skills*, 126(6), pp. 1084–1100.
- [23] Taylor, D. (2014) 'Physical activity is medicine for older adults: Table 1', *Postgraduate Medical Journal*, pp. 26–32. doi: 10.1136/postgradmedj-2012-131366.
- [24] Vijayalakshmi, B. and Ganapathy, D. (2016) 'Medical management of cellulitis', *Research Journal of Pharmacy and Technology*, p. 2067. doi: 10.5958/0974-360x.2016.00422.4.
- [25] Watson, A. et al. (2017) 'Effect of classroom-based physical activity interventions on academic and physical activity outcomes: a systematic review and meta-analysis', *The international journal of behavioral nutrition and physical activity*, 14(1), p. 114.
- [26] West, S. L. et al. (2019) 'Physical activity for children with chronic disease; a narrative review and practical applications', *BMC Pediatrics*. doi: 10.1186/s12887-018-1377-3.
- [27] Jain, A. R. and Dhanraj, M. (2016) 'A clinical review of spacer design for conventional complete denture' In: *Early pregnancy: biology and medicine: the official journal of the Society for the Investigation of Early Pregnancy* 8 (5) p.1.
- [28] Bokadia, G. S. et al. (2018) 'A systematic review on cancer therapy in ayurveda' In: *Research journal of pharmaceutical, biological and chemical sciences* 10 (1) pp.211–213.
- [29] Degirmenci, K. and Saridag, S. (2020) 'Effect of different surface treatments on the shear bond strength of luting cements used with implant-supported prosthesis: An in vitro study' In: *The journal of advanced prosthodontics* 12 (2) pp.75–82.
- [30] Jain, A. R. and Nallaswamy, D. (2018) 'Comparison of gingival retraction produced by retraction cord and expasyl retraction systems-An in vivo study' In: *Drug Invention Today* 10 (1) pp.35–41.
- [31] Prakash, M. S. and Ganapathy, D. M. (2019) 'Knowledge awareness practice survey on awareness of concentrated growth factor among dentists' In: *Drug Invention At: <http://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawlerYsFrwLfdIoOzTHTJLgYpnVuQr6QfGXt01lQPTOmypcShsj0BQ%3D%3D&c>*

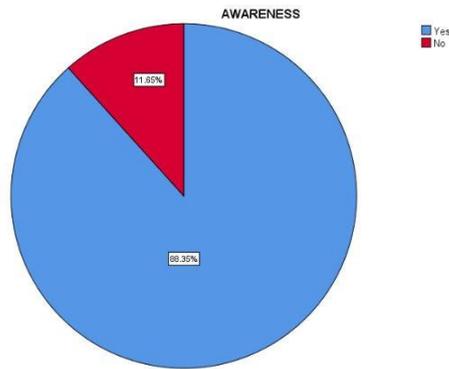


Figure 1 : Pie chart showing percentage distribution of responses about awareness on the effect of physical activity to control systemic diseases. Majority of the respondents agreed to the statement (88.35 %) denoted in blue colour. Only (11.65%) of the respondents disagreed with the statement denoted in red colour.

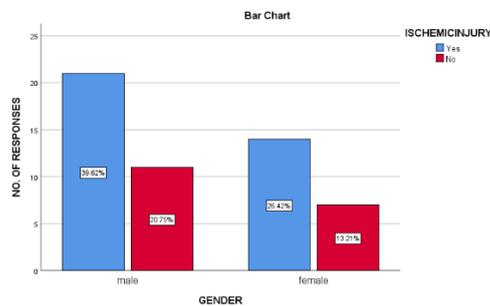


Figure 2 : Bar graph showing comparison of responses based on gender and awareness on more exercise can decrease ischemic injury leading to cardiac protection , where blue denoted ‘yes’ and pink denoted ‘no’. X axis represents gender and Y axis represents no. of responses. Higher number of males reported more awareness (39.62%) than (26.42%) of females. Association between the two variables were tested by chi-square analysis (p-value = 0.569) and was found to be statistically not significant for a p value of 0.05 implying that both males and females have same levels of awareness about more exercise can decrease ischemic injury leading to cardiac protection .

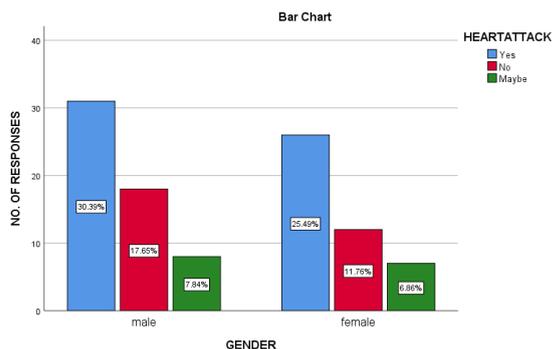


Figure 3: Bar graph showing comparison of responses based on gender and awareness on at least 150 minutes of moderate activity can prevent heart attack, where blue denoted ‘yes’, pink denoted ‘no’ and green denoted ‘maybe’. X axis represents gender and Y axis represents no. of responses. Higher number of males reported more awareness (30.39%) than (25.49%) of females about prevention of heart attack by 150 minutes of moderate activity. Association between the two variables were tested by chi-square analysis (p-value = 0.042) and was found to be statistically not significant for a p value of 0.05 implying that both males and females have same levels of awareness about 150 minutes of moderate activity having the ability of preventing an heart attack.

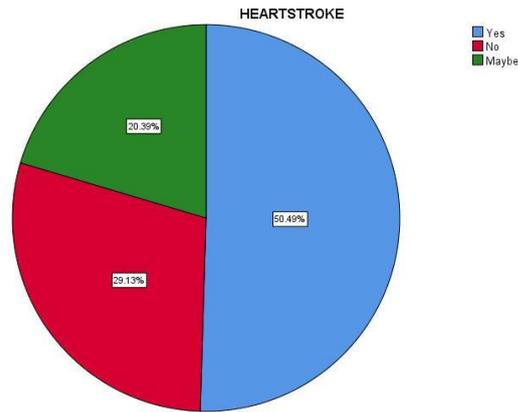


Figure 4 : Pie chart showing percentage distribution of responses about awareness on exercise reduces systolic pressure by 3-4mmHg, causes lesser chances of heart stroke. Majority of the respondents agreed to the statement (50.49 %) denoted in blue colour. Only (29.13%) of the respondents disagreed with the statement denoted in red colour.

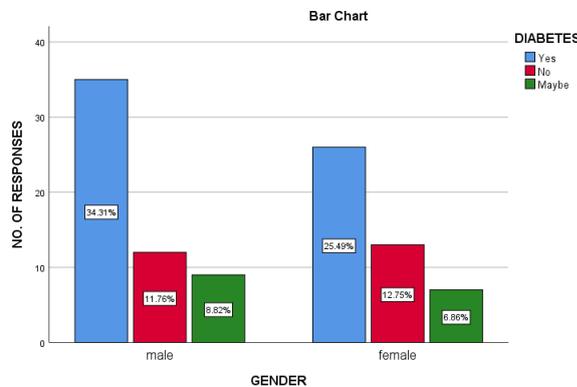


Figure 5 : Bar graph showing comparison of responses based on gender and awareness on diabetes can be controlled by diet and exercise, where blue denoted ‘yes’, pink denoted ‘no’ and green denoted ‘maybe’. X axis represents gender and Y axis represents no. of responses. Higher number of males reported more awareness (34.31%) than (25.49%) of females. Association between the two variables were tested by chi-square analysis (p-value = 0.725) and was found to be statistically not significant for a p value of 0.05 implying that both males and females have the same levels of awareness about diabetic control with diet and exercise .

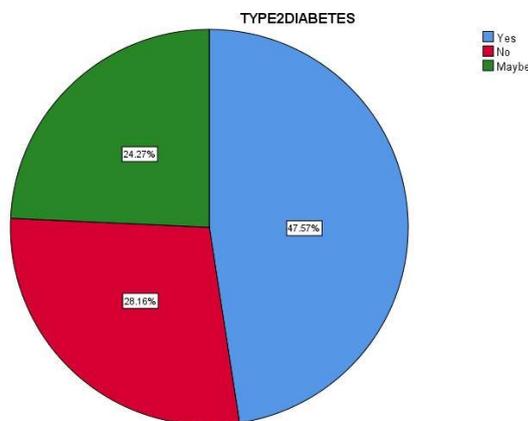


Figure 6: Pie chart showing percentage distribution of responses about awareness on more physical activity can delay chances of being diagnosed with Type 2 diabetes . Majority of the respondents agreed to the statement (47.57 %) denoted in blue colour. Only (28.16%) of the respondents disagreed with the statement denoted in red colour.

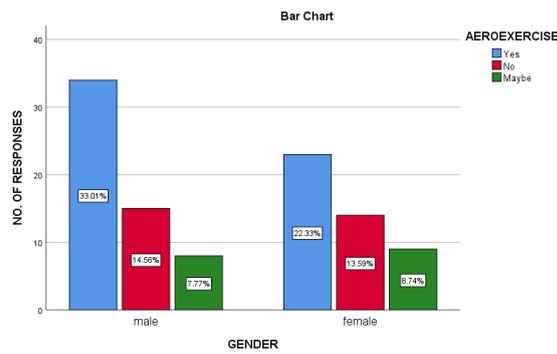


Figure 7: Bar graph showing comparison of responses based on gender and awareness on aerobic exercise can control diabetes, where blue denoted ‘yes’, pink denoted ‘no’ and green denoted ‘maybe’. X axis represents gender and Y axis represents no. of responses. Higher number of males reported more awareness (33.01%) than (22.33%) of females. Association between the two variables were tested by chi-square analysis (p-value = 0.643) and was found to be statistically not significant for a p value of 0.05 implying that both males and females have the same levels of awareness about aerobic exercises over diabetic control .

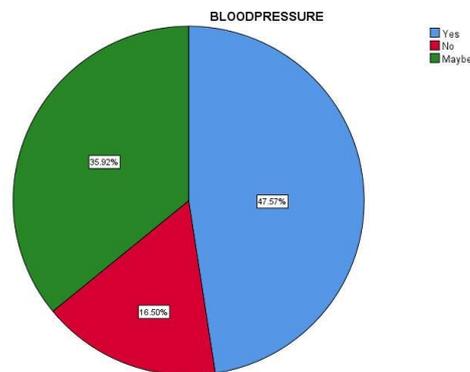


Figure 8: Pie chart showing percentage distribution of responses about awareness on regular exercise maintaining blood pressure below 130/80 mmHg . Majority of the respondents agreed to the statement (47.57 %) denoted in blue colour. Only (16.50%) of the respondents disagreed with the statement denoted in red colour.

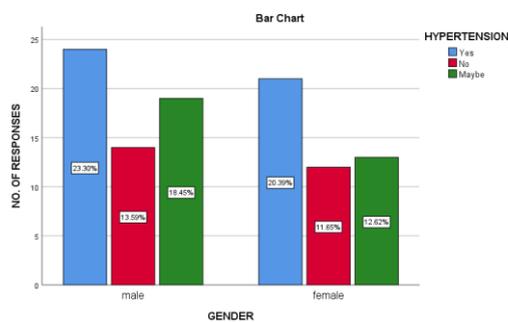


Figure 9 : Bar graph showing comparison of responses based on gender and awareness on stretching of arms and legs can help in hypertension, where blue denotes ‘yes’, pink denotes ‘no’ and green denotes ‘maybe’. X axis represents gender and Y axis represents no. of responses. Higher number of males reported having awareness ( 23.30%) than ( 20.39%) of females. Association between the two variables were tested by chi-square analysis (p-value = 0.857) and was found to be statistically not significant for a p value of 0.05 implying that both males and females have the same levels of awareness about stretching of arms and legs can help in hypertension.

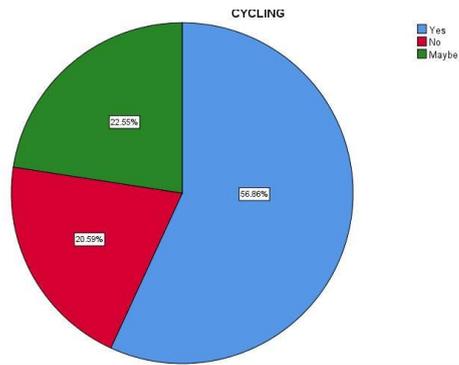


Figure 10: Pie chart showing percentage distribution of responses about knowledge of exercise bicycles helps strengthen immune systems and for constant pressure. Majority of the respondents agreed to the statement (56.86%) denoted in blue colour. Only (20.59%) of the respondents disagreed with the statement denoted in red colour.