



ISSN: 2456-0057

IJPNPE 2018; 3(1): 26-31

© 2018 IJPNPE

www.journalofsports.com

Received: 09-11-2017

Accepted: 10-12-2017

Ishtiaq Ahmad Bhat

PhD Scholar, Department of
Physical Education & Sports,
Pondicherry University,
Puducherry, India

D Sultana

Professor, Department of
Physical Education & Sports,
Pondicherry University,
Puducherry, India

Life-style factors and health related quality of life among young adult males

Ishtiaq Ahmad Bhat and D Sultana

Abstract

Background: The valid and appropriate indicator of public health, which has been highly acknowledged is the health related quality of life (HRQOL). However there is scarcity of data regarding the life-style factors and HRQOL among the young adult males. The aim of the present study was to explore the association of HRQOL with the various life-style factors.

Methods: A cross sectional study was conducted to investigate the HRQOL of 750 college going adult male's using simple random sampling method. Independent samples t-test, one way ANOVA and multiple stepwise regression were used to analyze the life-style factors which influence the HRQOL among young adults.

Results: There were significant differences between the life-style factors such as smoking, screen based media, having breakfast, sleeping time and daily life physical activity and among the physical component summary (PCS), mental component summary (MCS) and total health scores (THS) as shown by the univariate analysis ($P < 0.005$). Multiple stepwise regression showed that there were significant differences between HRQOL and the various life-style patterns ($p < 0.005$).

Conclusion: In the present study using SF-36 instrument and IPAQ long form, we assessed the relationship between HRQOL and life-style factors which include daily life physical activity, smoking, screen based media, having breakfast and sleep time. The results indicate that life-style factors affect the HRQOL among the young adults.

Keywords: HRQOL, SF-36, IPAQ, lifestyle, young adult males

1. Introduction

Health has been defined as a state of complete mental, physical and social-wellbeing and not merely the absence of disease or infirmity by the WHO [1]. It is rightly said that the wealth of a nation resides in the health of its citizens. No doubt modernization and technological advancements have raised our standard of living but at the same time offers a sedentary life style which is destroying the good conditions of a human body [2]. However the standard of living should not be confused with the quality of life. Quality of life is a general well-being of individuals and societies whereas standard of living is primarily based on economic conditions. Quality of life is defined by the WHO as the living conditions associated with the standards, expectations, corresponding goals and concerns of each individual under various cultural and social set-ups [3, 4]. The quality of life is mainly measured by using the rating scales. The Medical Outcomes Short Form health survey (SF-36) instrument is a widely used generic HRQOL consisting of 36 questions. The SF-36 instrument measures health in eight dimensions; physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional and mental health [5]. HRQOL is defined as the overall impact of a medical condition on the physical, mental and social well-being of an individual [6]. Research of recent time has a goal to test the strategies so as to improve the HRQOL in general population, such as increased physical activity. Although there is scarcity of data on HRQOL from physical activity interventions especially on adults [7].

Doing physical activity on a regular basis is an important factor for the prevention of non-communicable diseases (NCD's) [8] such as coronary artery disease (CAD) cancers, diabetes and stroke of various types. Physical activity provides both physiological as well as psychological benefits to individuals of various age groups [9]. Walking, moderate and vigorous activities during house hold works, transportation and leisure time pursuits contribute

Correspondence

Ishtiaq Ahmad Bhat

PhD Scholar, Department of
Physical Education & Sports,
Pondicherry University,
Puducherry, India

to better levels of body weight and fitness as well [10]. Research shows that physical activity like walking during transportation reduces the risk of mortality caused by stroke and NCD's [11, 12].

Several aspects of quality of life are associated with the regular physical activity and this association has been consistently reported in the literature [13, 14, 15]. However there is limited evidence available about the relationship between life style factors and physical activity intensity with specific dimensions of HRQOL among adult males. The present study assessed the association between DLPA, lifestyle factors and HRQOL. In this study we aimed to explore the self-reported HRQOL among young adult males using the SF-36 instrument; association between DLPA and HRQOL and the impact of life style factors such smoking, use of SBM, having breakfast and sleep time on HRQOL. The information gathered on the issue can provide important information for researchers, health care professionals, educational administrators and policy makers to provide appropriate interventions for the improvement of HRQOL among young male adults.

2. Materials and Methods

A cross sectional survey of a random sample of young male adults selected from five different regions (viz. Pulwama, Shopian, Srinagar, Ganderbal and Baramulla) of the Kashmir valley of Jammu & Kashmir state was conducted. Young adult males in the present study refer to those who were pursuing their Bachelor's Degree in five different Government Degree Colleges. These five regions represent typical levels in respect of the regions geographical distribution which is South, Central and North Kashmir. These five regions represent the characteristics of different types. Therefore the survey of young adult males from these regions could well represent the HRQOL and DLPA cum life style of young adult males of Kashmir. A total of 750 adults were selected for this study through simple random sampling method, with an average of 150 samples from each college. However only 516 samples were used for the statistical analysis because the data obtained from 54 samples were not complete (Questionnaire left incomplete) and 82 samples does not meet the inclusion criteria. However 98 samples from the target sample size does not respond at all. The inclusion criteria for the study was Physical Activity Readiness Questionnaire (PARQ) framed by the American College of Sports Medicine (ACSM). For the present study the age of adult males ranged between 18-25 years which was confirmed from the admission registers of the respective colleges.

2.1 Measurement tools

A questionnaire survey was conducted during April-November 2015. The questionnaire involved two parts. The first part included IPAQ and some general lifestyle factors. However the sample selected for the study were college going

students, hence the Part I of the IPAQ which is job related physical activity was not taken into consideration. The second part was the HRQOL measurement scale; the SF-36. DLPA was assessed by using the long version of IPAQ. The metabolic equivalents (MET) values were used for measurement. Based on the guidelines for data processing and analysis of the IPAQ the subjects were divided into three groups viz. low level physical activity group (LLPAG means ≥ 600 MET minutes/week which equals to ≥ 150 minutes of moderate activity per week), medium level physical activity group (MLPAG means 601 – 3000 MET minutes/week which equals to 151-750 minutes of moderate activity per week) and high level physical activity group (HLPAG means <3001 MET minutes/week which equals to <751 minutes of moderate activity per week). The part first of the questionnaire also included the life-style factors which are smoking, sleep time, having breakfast and time spent on SBM (SBM).

SF-36 is an instrument containing 36 items which measure the health in 8 dimensions by using a multi-item scale. The eight items are physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional and mental health. These 8 scales were scored from 0 (worst possible health status measured by the questionnaire) to 100 (best possible health status) and the scoring was done with the help of Quality Metrics Health Outcome scoring software version 4.5. The SF-36 is a reliable and validated instrument for the measurement of HRQOL.

2.2 Statistical analysis

The collected data was treated statistically by using the SPSS for windows version 20. The statistical description of frequencies, percentages mean and standard deviation were used for life style parameters. After calculating the descriptive statistics Independent samples t-test and One Way ANOVA was used to assess the group differences with respect to their statistical significance. Additionally multivariate step wise regression was performed to assess the impact of DLPA, smoking, sleep time, time spent on SBM and taking breakfast on HRQOL.

3. Results

3.1 Demographic characteristics of the participants

Total 750 participants were randomly selected and 652 (86.95%) responded to the study. Among them 516 (79.15%) samples were included in the data analysis. Table 1 shows that 119 (23.1%) were 18 years of age, 116 (22.5%) were 19 years of age, 83 (16.1%) were 20 years of age, 27 (5.2%) were 21 years of age, 34 (6.6%) were 23 years of age, 26 (5%) were 24 years of age and 28 (5.4%) were of 25 years age. The table further shows the frequency of the samples based on the DLPA, Smoking, taking breakfast, SBM and sleep time.

Table 1: Frequency distribution of adult males demographical and lifestyle characteristics (N=516)

| Factor | Groups | N | % | Factor | Groups | N | % |
|--------|--------|-----|-------|--------------------------|---------------|-----|--------|
| Age | 18 | 119 | 23.1% | Taking breakfast | Never | 32 | 6.2% |
| | 19 | 116 | 22.5% | | Sometimes | 112 | 21.7% |
| | 20 | 83 | 16.1% | | Often | 54 | 10.5% |
| | 21 | 83 | 16.1% | | Everyday | 318 | 61.6% |
| | 22 | 27 | 5.2% | | Total | 516 | 100.0% |
| | 23 | 34 | 6.6% | Screen Based Media | Below 1 Hour | 96 | 18.6% |
| | 24 | 26 | 5.0% | | Below 2 Hours | 165 | 32% |
| | 25 | 28 | 5.4% | | Below 3 Hours | 120 | 23.3% |

| | | | | | | | |
|------------------------------|------------|-----|--------|--------------------|-------------------|-------|--------|
| Daily Life Physical Activity | Total | 516 | 100.0% | Sleep time | Below 4 Hours | 83 | 16.1% |
| | Llpag | 34 | 6.6% | | More Than 5 Hours | 52 | 10.1% |
| | Mlpag | 154 | 29.8% | | Total | 516 | 100.0% |
| | Hlpag | 328 | 63.6% | | Below 4 Hours | 14 | 2.7% |
| | Total | 516 | 100.0% | | Below 6 Hours | 97 | 18.8% |
| Smokin g | Smoker | 93 | 18.0% | Below 8 Hours | 224 | 43.4% | |
| | Non-Smoker | 423 | 82.0% | More Than 8 Hours | 136 | 26.4% | |
| | Total | 516 | 100.0% | More Than 10 Hours | 45 | 8.7% | |

3.2 HRQOL of young college going adult males

Table 2 shows the scores of HRQOL among young college going adult males. The PCS has a mean value of 54.97 with

standard deviation of 5.48, MCS has a mean value of 49.84 with SD of 9.72 and THS has the mean value of 52.39 and SD 6.14.

Table 2: Hrqol of Young Adult Males

| Scale | Mean | SD |
|----------------------------|---------|----------|
| Physical Component Summary | 54.9716 | 5.48399 |
| Physical Functioning | 54.3066 | 4.51445 |
| Role Playing | 50.8864 | 8.14457 |
| Bodily Pain | 56.4756 | 8.39315 |
| General Health | 52.4822 | 9.27754 |
| Mental Component Summary | 49.8312 | 9.72956 |
| Vitality | 57.0142 | 9.94134 |
| Social Functioning | 49.4701 | 9.34240 |
| Role Emotional | 48.7060 | 9.74218 |
| Mental Health | 51.3399 | 10.86453 |
| Total Health Score | 52.3968 | 6.14548 |

3.3 Univariate Analysis

Association between life-style factors and HRQOL is shown in table 3. The table shows significant differences ($P < 0.05$) between life-style factors and both PCS and MCS of HRQOL. The smoking group had lower scores than non-smoking group. The scores of the adults who were classified as LLPAG were significantly lower than those of other two groups (MLPAG & HLPAG) and a similar trend was found in the scores who never ate breakfast than those of other groups. The group in which the young adults used less than 4 hours a day on SBM had significantly higher values of PSC & MCS as compared to the group who used more than 5 hours a day for SBM. The group in which the young adults had more than 10 hours of sleep or less than 4 hours of sleep had significantly lower values of PCS & MCS as compared to the

groups who had more than 6 hours and less than 10 hours of sleep a day.

3.4 Multiple step-wise linear regression analysis

The score of SF-36 instrument was used as dependent variable and the life-style factors as independent variable. To analyze the life-style factors that affect the young adult males HRQOL, multiple step-wise linear regression analysis was conducted. The analysis shows that there was a significant difference among PCS, MCS and THS between life-style factors such as smoking, SBM, having breakfast, sleeping time and DLPA in THS, having breakfast, DLPA, SBM and smoking in PCS and smoking, SBM, sleeping time and having breakfast in MCS ($P < 0.05$) see table 4.

Table 3: Association of life-style factors with the PCS, MCS and THS of the HRQOL.

| Factors | Groups | Health Related Quality of life | | | | | |
|------------------|------------|--------------------------------|------|-----------|-------|----------|------|
| | | PCS Score | | MCS score | | TH Score | |
| | | Mean | SD | Mean | SD | Mean | SD |
| Smoking | Smoker | 52.90 | 5.94 | 44.05 | 10.77 | 48.22 | 7.39 |
| | Non-smoker | 55.42 | 5.27 | 51.10 | 9.01 | 53.31 | 5.43 |
| | t | 4.075 | | 6.581 | | 6.272 | |
| | P | 0.000 | | 0.000 | | 0.000 | |
| DLPA | LLPAG | 50.80 | 7.84 | 42.02 | 8.86 | 46.30 | 6.80 |
| | MLPAG | 54.69 | 5.91 | 49.74 | 9.12 | 52.15 | 5.86 |
| | HLPAG | 55.53 | 4.75 | 50.68 | 9.65 | 53.13 | 5.85 |
| | F | 12.230 | | 12.758 | | 20.688 | |
| | P | 0.000 | | 0.000 | | 0.000 | |
| Taking breakfast | Never | 48.70 | 8.65 | 40.50 | 12.38 | 44.53 | 8.13 |
| | Sometimes | 54.41 | 5.39 | 49.77 | 10.34 | 52.23 | 6.69 |
| | Often | 53.34 | 6.49 | 48.21 | 9.92 | 51.27 | 6.08 |
| | Everyday | 56.07 | 4.30 | 51.06 | 8.60 | 53.43 | 5.04 |
| | F | 22.763 | | 12.825 | | 23.932 | |
| | P | 0.000 | | 0.000 | | 0.000 | |
| SBM | >1 hour | 55.93 | 4.11 | 52.30 | 7.81 | 54.23 | 4.58 |
| | >2 hours | 55.35 | 5.30 | 50.96 | 9.61 | 53.02 | 6.04 |
| | >3 hours | 55.33 | 5.31 | 50.62 | 9.56 | 53.05 | 6.01 |
| | >4 hours | 54.09 | 5.96 | 47.92 | 8.67 | 51.38 | 5.26 |
| | <5 hours | 52.53 | 6.99 | 42.89 | 11.76 | 47.10 | 7.54 |

| | | | | | | | |
|---------------|-----------|-------|-------|--------|-------|--------|------|
| | F | 4.261 | | 10.427 | | 14.494 | |
| | p | 0.002 | | 0.000 | | 0.000 | |
| Sleeping time | >4 hours | 54.45 | 4.93 | 49.26 | 11.93 | 51.92 | 7.43 |
| | >6 hours | 55.45 | 5.48 | 52.49 | 8.42 | 54.35 | 4.98 |
| | >8 hours | 55.40 | 5.00 | 50.06 | 9.03 | 52.70 | 5.53 |
| | <8 hours | 54.90 | 5.36 | 50.31 | 9.57 | 52.39 | 6.13 |
| | <10 hours | 52.12 | 7.35 | 41.63 | 11.44 | 46.81 | 7.70 |
| | F | 3.372 | | 10.682 | | 13.040 | |
| p | 0.006 | | 0.000 | | 0.000 | | |

4. Discussions

The present study investigates the relationship between life-style factors and HRQOL among a sample of young adult males. The results of the study explored that life-style factors such as smoking, SBM, having breakfast, sleeping time and DLPA have a strong association with the HRQOL of young adults, which means personal habits have an impact on quality of life. Personal living habits can either be good or bad such as smoking, a bad living habit is a major factor causing a decline in HRQOL. The HRQOL decreases in those who are smoking cigarettes frequently and the decline in quality of life is more in those who smoke heavily and for higher durations [16,17]. Smoking is a great threat to human life, and 11% of the total world population dies because of cardiovascular diseases induced by smoking [18]. In this study, the total smoking rate among young college male adults is 18%. Therefore smoking can cause harm to the young adults. The more smoking, the greater damage there is to adult’s health and lowers the HRQOL score.

Inactivity has been linked to obesity among adolescents [19, 20]. Various studies have shown that television viewing, computer use and videogame playing may disrupt the body’s energy balance [21, 22]. Excessive use of computer and sedentariness have an adverse effect on health [23]. Several studies have shown that frequent use of SBM is related to health outcomes, which are related to HRQOL such as reduced psychological well-being [24] and poorer physical health [25]. The present study observed a strong inverse relationship between SBM use and HRQOL among male adults. These findings are in consistent with the studies showing that SBM could be an independent health risk. [24, 25]. The relationship between SBM use among adolescents are not straight forward [26, 27] and association between SBM and health correlates are even less well understood [24]. The findings of this study emphasize to researchers the importance of evaluating SBM use when inquiring about HRQOL. The findings could also contribute for health interventions focused on promoting physical health and reducing the SBM use among adults. Poor eating habits

and irregular lifestyle is closely related to the decline of HRQOL. In the present study some young adults had no breakfast or rarely did so and the proportion of those having breakfast daily was 61.6%. The phenomenon of irregular diet and no breakfast among adults is a serious issue. These results are in line with the findings of previous study [28]. As a basic human need, food intake affects peoples HRQOL [29]. A hungry body may easily lead to dizziness, physical and mental deficiencies, palpitation and so on. Cross sectional and longitudinal studies have shown that regularly skipping the breakfast is associated with greater BMI among all age groups [30, 31, 32] and it can be said that BMI is a good indicator of one’s general health. Taking breakfast on a regular basis is the healthy material guarantee. However the adult males should change bad eating habits, have no food on time and pay attention to a reasonable nutrition as well. Low quality of sleep may affect the immune system, the ability to function and social activities and may have an impact on physical and mental health in HRQOL [33]. Sleep time is closely related to HRQOL [34]. Having a good sleep is important to general health. Physiologically all the body’s vital functions are slowed down, completely at rest so as to recover and accumulate the body’s energy. Sleeping less than 6 hours a day is linked to the occurrence of many diseases and people who sleep more than 8 hours a day show less illness [35]. The present study showed that sleep quality i.e. sleeping for 8-10 hours a day had higher scores of HRQOL as compared to those who sleep less than 6 hours or more than 10 hours per day. This finding is in consistent with the other previous studies [28, 35, 36]. Having sleep for a good time not only maintains the normal physiological functioning of the body but also protects the normal metabolic activities. People having inadequate sleep time may get many negative manifestations such as sleep deprivation, physical discomfort and negative emotions which leads to decline of HRQOL [28]. Therefore young adults should manage the life-style in a manner to ensure adequate sleeping time.

Table 4: Association between the lifestyle factors and HRQOL (Multivariate analysis N= 516)

| Scales | Life-style factors | B | SE | β | t | p | 95% CI | |
|--------|--------------------|--------|-------|-------|--------|------|--------|-------|
| THS | Smoke | 3.365 | .662 | .211 | 5.083 | .000 | 2.065 | 4.666 |
| | SBM | -.946 | .201 | -.190 | -4.698 | .000 | -1.342 | -.551 |
| | Breakfast | .925 | .253 | .151 | 3.654 | .000 | .428 | 1.422 |
| | Sleeping | -.894 | .268 | -.136 | -3.339 | .001 | -1.419 | -.368 |
| | DLPA | 1.001 | .415 | .100 | 2.414 | .016 | .186 | 1.815 |
| PCS | Breakfast | 1.239 | .239 | .227 | 5.176 | .000 | .769 | 1.710 |
| | DLPA | .972 | .386 | .109 | 2.517 | .012 | .213 | 1.732 |
| | SBM | -.420 | .190 | -.094 | -2.208 | .028 | -.793 | -.046 |
| | Smoke | 1.238 | .621 | .087 | 1.994 | .047 | .018 | 2.458 |
| MCS | Smoke | 5.182 | 1.081 | .205 | 4.793 | .000 | 3.058 | 7.306 |
| | SBM | -1.465 | .330 | -.186 | -4.432 | .000 | -2.114 | -.815 |
| | Sleeping | -1.330 | .434 | -.128 | -3.062 | .002 | -2.183 | -.477 |
| | Breakfast | 1.009 | .413 | .104 | 2.447 | .015 | .199 | 1.820 |

The evidence regarding the healthy benefits of DLPA is overwhelming and continues to accumulate since ancient times [37, 38]. Regular physical activity has structured and beneficial functional effects on cardiovascular system [39]. Taking part in various types of physical activities can improve the HRQOL, is suggested by the findings of this study. Physical activity can reduce the risk of various heart diseases and ultimately overall mortality [28]. Physical activity influences the most structural components of the musculoskeletal system in a positive way [40] and muscular weakness is the prime factor for a decrease in general health [41]. Besides physiological benefits, DLPA have psychological benefits as well which include relaxation, increased social contact, promotion of positive mental health, psychological well-being and cognition functioning [42]. Physical fitness as a result of physical activity is loosely associated with good health [43]. These benefits of PA allow the physically active person to have physiological, functional, and psychological fitness and consequently higher HRQOL.

5. Conclusions

Despite several limitations like the indirect measurements of physical activity and the fact that the data are all self-reported the present study is the first to provide association of various life-style factors with the HRQOL among young adult males. Although there is need for further research in other parts of the country, all those concerned with the public health are urged to develop and implement effective strategies to increase physical activity and a suitable change in life-style factors so as to improve the HRQOL among young adults based on the findings of this study.

6. Abbreviations

HRQOL: Health Related Quality Of Life.

IPAQ: International Physical Activity Questionnaire.

PCS: Physical Component Summary.

PARQ: Physical Activity Readiness Questionnaire.

MCS: Mental Component Summary.

ACSM: American College of Sports Medicine.

THS: Total Health Scores.

MLPAG: Medium Level Physical Activity Group.

DLPA: Daily Life Physical Activity.

HLPA: High Level Physical Activity Group.

SBM: Screen Based Media.

LLPAG: Low Level Physical Activity Group.

7. References

- World Health Organization Definition of Health. <http://www.who.int/about/definition/en/print.html>
- Bashir S, Bhat IA. A Comparative Study of Physical Fitness Components among Rural and Urban Female Students of Kashmir. *Horizon Palaestra: International Journal of Health, Sports and Physical Education*. 2014; 2(2):19-23.
- World Health Organization: Report of meeting on quality of life. Geneva: WHO; 1992.
- WHO: The development of the WHO quality of life assessment instrument. Geneva: WHO; 1993.
- Sinha R, van den Heuvel WJ, Arokiasamy P. (2013). Validity and reliability of mos short form health survey (sf-36) for use in India. *Indian J Community Med*, 38, 22-26.
- Guyatt GH, Feeny DH, Patrick DL, Measuring health-related quality of life. *Ann Intern Med*, 1993; 118:622-629.
- Bize R, Johnson JA, Plotnikoff RC. Physical activity level and health-related quality of life in the general adult population: A systematic review. *Preventive Medicine*, 2007; 45(6):401-415.
- Warburton D, Nicol C, Bredin S. Health benefits of physical activity: The evidence. *Canadian Medical Association Journal*. 2006; 174(6):801-809.
- Olson SH, Lyer S, Scott J. *et al.* Cancer history and other personal factors affect quality of life in patients with hepatitis C. *Health and Quality of Life Outcomes*. 2005; 3, 39.
- Fontaine KR., *et al.* Weight loss and health-related quality of life: Results at 1-year follow-up. *Eating Behaviours*, 5(1):85-88.
- Andersen LB, *et al.* All-cause mortality associated with physical activity during leisure time, work, sports, and cycling to work. *Archives of Internal Medicine*. 2000; 160(11), 1621-1628.
- Hu G, *et al.* Leisure time, occupational, and commuting physical activity and the risk of stroke. *Stroke*, 2005; 36(9):1994-1999.
- Bize R, Johnson J, Plotnikoff R. Physical activity level and health-related quality of life in the general adult population: A systematic review. *Preventive Medicine*, 2007; 45(6):401-415.
- Rejeski W, Brawley L, Shumaker S. Physical activity and health-related quality of life. *Exercise and Sport Science Review*, 1996; 24:71-108.
- Rejeski W, Mihalko S. Physical activity and quality of life in older adults. *Journal of Gerontology Series A: Biological Science Medical Science*, 2001; 56(2):23-35.
- Wilson D, parsons J, Wakefield M. The health-related quality-of-life of never smokers, ex-smokers, and light, moderate and heavy smokers. *Prev Med*, 1999; 29:139-144.
- Sarna L, Bialous SA, Cooley MA, *et al.* Impact of smoking and smoking cessation on health related quality of life in women in the Nurses' health study. *Qual life Res*, 2008; 17:1217-27.
- Su ZH, Hao W, Chen HX. Alcohol Patterns, Alcohol Consumption and Alcohol-Related Problems in Five Areas in China: Health Status of Drinkers Collaborate Group for 2nd Survey on Alcohol Drinking in Five Areas in China. *Chinese Mental Health Journal*, 2003; 17(8):540-543.
- Monda KL, Popkin BM. Cluster analysis methods help to clarify the activity-BMI relationship of Chinese Youth. *Obes. Res*, 2005; 13:1042-51.
- Must A, Tybor DJ. Physical activity and sedentary behavior: A review of longitudinal studies of weight adiposity in youth. *Int. J. Obes. (Lond.)*, 2005; 29(Suppl. 2): S84-96.
- Epstein LH, Roemmich JN, Paluch RA, Raynor HA. Physical activity as a substitute for sedentary behavior in youth. *Ann. Behav. Med.*, 2005; 29:200-9.
- Matheson DM, Killen JD, Wang Y, Varady A, Robinson TN. Children's food consumption during television viewing. *Am. J. Clin. Nutr.*, 2004; 79:1088-94.
- Balboa-Castillo T, León-Muñoz LM, Graciani A, Rodríguez-Artalejo F, Guallar-Castillón P. Longitudinal association of physical activity and sedentary behavior during leisure time with health-related quality of life in community-dwelling older adults. *Health Qual Life Outcomes*, 2011; 9: 47-56.
- Page AS, Cooper AR, Griew P, Jago R. Children's screen

- viewing is related to psychological difficulties irrespective of physical activity. *Pediatrics*. 2010; 126(5). Available at: www.pediatrics.org/cgi/content/full/126/5/e1011
25. Iannotti RJ, Kogan MD, Janssen I, Boyce WF. Patterns of adolescent physical activity, screenbased media use, and positive and negative health indicators in the U.S. and Canada. *J Adolesc Health*. 2009; 44(5):493-499.
 26. Iannotti RJ, Janssen I, Haug E, Kololo H, Annaheim B, Borraccino A. Interrelationships of adolescent physical activity, screen-based sedentary behaviour, and social and psychological health. *International Journal of Public Health*. 2009; 54(2):191-198.
 27. Burke V, Beilin LJ, Durkin K, Stritzke WG, Houghton S, Cameron CA *et al* Television, computer use, physical activity, diet and fatness in Australian adolescents. *International Journal of Pediatric Obesity*, 2006; 1(4):248–255.
 28. Xu *et al*. Lifestyle and health-related quality of life: A cross-sectional study among civil servants in China. *BMC Public Health*, 2012, 12:330. Available at <http://www.biomedcentral.com/1471-2458/12/330>.
 29. Kyle SD, Morgan K, Espie CA. Insomnia and health-related quality of life. *Sleep Medicine Reviews*, 2010; 14(1):69-82.
 30. Ma Y, Bertone ER, Stanek EJ 3rd, Reed GW, Hebert JR, Cohen NL, *et al*. Association between eating patterns and obesity in a free- living US adult population. *Am J Epidemiol*, 2003; 158:85–92.
 31. Song WO, Chun OK, Obayashi S, Cho S, Chung CE. Is consumption of breakfast associated with body mass index in US adults? *J Am Diet Assoc*, 105, 1373–82.
 32. Berkey CS, Rockett HR, Gillman MW, Field AE, Colditz GA. Longitudinal study of skipping breakfast and weight change in adolescents. *Int J Obes Relat Metab Disord*, 2003; 27:1258–66.
 33. Chen X, Gelaye B, Williams MA. Sleep characteristics and health-related quality of life among a national sample of American young adults: assessment of possible health disparities. *Qual Life Res*, 23,615–327.
 34. Batty GD. (2002). Physical activity and coronary heart disease in older adults. A systematic review of epidemiological studies. *Eur J Public Health*, 12(3), 171–176.
 35. Thun MJ. (1997). Alcohol consumption and mortality in middle-aged and elderly US adults. *New England Journal of Medicine*, 337(24), 1705–1714.
 36. Tian Song, Yan-wei Ding, Yan Sun, et al. A population-based study on health-related quality of life among urban community residents in Shenyang, Northeast of China. *BMC Public Health*, 2015; 15:921.
 37. González G, Sedentarism M. Active Lifestyle and Sport: Impact on Health and Obesity Prevention. *Nutrición Hospitalaria*, 2013; 28:89-98.
 38. Prasad D, Das B. Physical Inactivity: A Cardiovascular Risk Factor. *Indian Journal of Medical Sciences*, 2009; 63:33-42. <http://dx.doi.org/10.4103/0019-5359.49082>
 39. Conti A, Macchi C. Protective Effects of Regular Physical Activity on Human Vascular System. *La Clinica Terapeutica*, 2013; 164:293-294.
 40. Vuori I. Exercise and Physical Health: Musculoskeletal Health and Functional Capabilities. *Research Quarterly for Exercise and Sport*, 1995; 66:276-285. <http://dx.doi.org/10.1080/02701367.1995.10607912>
 41. Bhat, Ishtiaq Ahmad and Bashir, Sakeena. Assessment of Muscular Fitness among the Students of Kashmir Using Kraus-Weber Tests. *PEFI: International Journal of Physical Education, Health and Sports Sciences*, 2014; 3 (1):52-58.
 42. El-Sobkey SB. Physical Activity Level and Adult Saudi Health Related Quality of Life. *Open Journal of Therapy and Rehabilitation*, 2014; 2:106-113. <http://dx.doi.org/10.4236/ojtr.2014.23015>.
 43. Bhat, Ishtiaq Ahmad and Bashir, Sakeena Comparative study of minimal muscular fitness among rural and urban students of Kashmir. *Internat. J. Phy. Edu.*, 2013; 6(2):91-94.