

Attitudes Toward Physical Activity According to Weight Status Among Schoolchildren in Sousse, Tunisia

Jihene Maatoug¹, Imed Harrabi¹, Jihene Sahli¹,
Olfa Ezzi¹, Dhekra Chebil¹, Mariem Gaddour¹,
Nesrine Saadi¹, and Hassen Ghannem¹

Abstract

Aim: To investigate differences in attitude toward physical activity in normal-weight, overweight, and obese adolescents.

Materials and Methods: We conducted a cross-sectional survey carried out in 2009/2010. It concerned randomly selected schoolchildren of colleges of Sousse in seventh and ninth grade. The sample was composed of 4003 schoolchildren. A questionnaire was used to evaluate habits and perception of physical activity, and we took anthropometric measurements of height and weight.

Results: Among schoolchildren who performed a recommended level of physical activity, there was no significant difference in perceptions according to weight status. However, among those who did not practice physical activity, obese participants had significantly less positive perception. Overweight and obesity significantly increase the risk of negative perception of physical activity practice among participants who do not do the recommended level of physical activity. However, this association becomes non significant among those who practice recommended level of physical activity. The same findings were observed after adjustment by age and sex.

Conclusion: Negative attitudes among inactive children may favor the development of a vicious circle perpetuating physical inactivity among normal-weight and overweight children.

Keywords

children, community health, obesity, physical activity, health promotion

Introduction

Obesity and physical inactivity are often positively associated in the literature¹ among children. According to the World Health Organization, approximately 60 minutes of moderate-intensity activity per day or equivalent is needed to prevent the transition from normal-weight to overweight or obesity status among children.²

Increasing prevalence of overweight and obesity in youngsters worldwide^{3,4} suggests that children are becoming less active and do not meet these recommendations.

However, attitude toward physical activity⁵ and perceived lack of physical competence⁶ are important predictors of engaging in physical activity. Even in children, obesity has a clear measurable negative impact on self-esteem, perceived athletic competence, physical appearance, and global self-worth.⁷

So obtaining better understanding of benefits and barriers of being physically active perceived by youngsters of different

degrees of overweight may help in developing physical activity interventions for overweight and obese adolescents.⁸

In fact, the cardiovascular and metabolic consequences of pediatric obesity have been extensively studied,⁹ but less attention has been paid to investigating the impact of obesity on physical functioning and disability in children. The purpose of this study was to investigate differences in attitude toward physical activity in normal-weight, overweight, and obese adolescents.

¹ Department of Epidemiology, University Hospital Farhat Hached, Sousse, Tunisia

Corresponding Author:

Jihene Maatoug, Department of Epidemiology, University Hospital Farhat Hached, Sousse, Tunisia.

Email: jihenmaatoug3107@gmail.com



Materials and Methods

Study Design

This study was part of an assessment of the prevalence of chronic disease risk factors in a community-based intervention program conducted in 2009 in the region of Sousse, Tunisia, with school component. We conducted a cross-sectional survey carried out in 2009/2010.

Study Population

The study concerned pupils of colleges of Sousse in seventh and ninth grade. The participants were randomly selected from all colleges of the delegations of Sousse Jawhara, Sousse Erriadh, and M'saken, which represent 16 colleges. The sample was composed of 4003 schoolchildren.

Data Collection

We have used an Arabic and pretested self-administered questionnaire. It was administered in classes with the presence of trained medical doctors to assist children filling out the questionnaires.

The questionnaire was used to evaluate habits and perception of physical activity.

Anthropometric measurements of height and weight were obtained using a standardized protocol from each participant during interview and clinical examination. Body weight was recorded to the nearest 0.1 kg using a portable electronic scale. Standing height is measured with the participants in barefeet to the nearest 0.5 cm.

Variables Definition

Participants who practice 60 min/d of physical activity were defined as physically active.

Definition of overweight and obesity. Body mass index was computed as the ratio of the body weight to the body height squared expressed as kg/m². To define overweight and obesity among schoolchildren, we used the recent international cutoff values of BMI according to age and sex.¹⁰

Statistical Analysis

Associations between categorical variables were tested by χ^2 test. We used binary logistic regression to evaluate association between weight status and perception of physical activity. Dependent variables were perception of physical activity. Weight status was the independent variable in univariate analysis, and then we adjusted with age and sex. All data analyses were conducted using SPSS 10.0 statistical software. All statistical tests were 2-tailed, and *P* values <.05 were considered statistically significant.

Ethical Consideration

Because of the young age of the studied population, this investigation was undertaken with respect of the rights and integrity of people. Parents gave their consent, and they were able to refuse their children's participation. We used an anonymous questionnaire that did not contain the name or the address of schoolchildren.

Results

The mean age of participants was 13.36 ± 1.28 with 48.3% of boys. Prevalence of overweight and obesity was 17.9% and 5.7%, respectively. There was no difference in practice of recommended level of physical activity according to weight status. It was 12.2%, 12%, and 8.7% among normal-weight, overweight, and obese participants, respectively (*P* = .30).

Among schoolchildren who performed a recommended level of physical activity, there was no significant difference in perceptions according to weight status. However, among those who did not practice physical activity, obese participants had significantly less positive perception (Table 1).

Overweight and obesity significantly increase the risk of negative perception of physical activity practice among participants who do not do the recommended level of physical activity. However, this association becomes non significant among those who practice recommended level of physical activity (Table 2). The same findings were observed after adjustment by age and sex (Table 3).

Discussion

This study further demonstrates that obese adolescents have a less positive attitude toward physical activity compared to normal-weight counterparts. However, after stratification by practice of physical activity, there is no long difference in attitudes according to weight status even after adjustment for sex and age.

According to Deforche et al,¹¹ overweight and obese adolescents show lower sport participation and have a less positive attitude toward physical activity in comparison with their normal-weight counterparts.

Benefits and barriers toward physical activity more frequently perceived by overweight and obese adolescents are specifically related to their weight problem. This is also due to the fact that obese children had higher perceived difficulty with several activities of daily living, were less engaged in sports, and had lower physical performance than normal-weight or overweight children.¹² Morano et al¹³ stated that overweight and obese participants, when compared with normal-weight peers, reported lower perceived and actual physical competence, higher perceived body fat, and greater body dissatisfaction. Body dissatisfaction mediated all the associations between body mass index and the different aspects of physical self-perception in boys but not in girls. The same pattern of results was found for physical self-perception as a

Table 1. Distribution of Perception of Practicing Physical Activity by Weight Status and Physical Activity Practice Among Schoolchildren in the Region of Sousse During the 2009/2010 School Year.

| | Normal Weight, n (%) | Overweight, n (%) | Obese, n (%) | P |
|------------------------------------|----------------------|-------------------|--------------|-------|
| It would make me tired | | | | |
| Physically active | 174 (47.2) | 36 (43.4) | 11 (55.0) | .62 |
| Not physically active | 1395 (53.0) | 366 (59.3) | 135 (65.5) | <.001 |
| It would make me embarrassed | | | | |
| Physically active | 28 (7.7) | 11 (13.1) | 2 (10.0) | .28 |
| Not physically active | 398 (15.1) | 135 (21.9) | 3 (60.0) | <.001 |
| It would be boring | | | | |
| Physically active | 27 (7.4) | 6 (7.1) | 0 (0) | – |
| Not physically active | 389 (14.8) | 111 (18.0) | 41 (19.9) | .03 |
| It would make me get hurt | | | | |
| Physically active | 112 (30.9) | 30 (36.1) | 4 (20.0) | .34 |
| Not physically active | 1047 (39.8) | 271 (44.4) | 94 (45.4) | .04 |
| It would give me energy | | | | |
| Physically active | 330 (88.9) | 75 (89.3) | 16 (84.2) | .80 |
| Not physically active | 2094 (79.9) | 473 (76.9) | 148 (73.3) | .03 |
| It would get or keep me in shape | | | | |
| Physically active | 348 (94.3) | 79 (94.0) | 18 (90.0) | .72 |
| Not physically active | 2428 (91.7) | 538 (87.5) | 169 (82.0) | <.001 |
| It would make me better in sports | | | | |
| Physically active | 352 (94.9) | 82 (97.6) | 20 (100.0) | .33 |
| Not physically active | 2312 (87.7) | 545 (87.6) | 165 (80.1) | .001 |
| It would be fun | | | | |
| Physically active | 338 (91.8) | 74 (87.1) | 20 (100.0) | .13 |
| Not physically active | 2323 (87.8) | 519 (84.0) | 163 (79.9) | .001 |
| It would help me control my weight | | | | |
| Physically active | 321 (87.0) | 73 (88.0) | 17 (85.0) | .93 |
| Not physically active | 2144 (81.7) | 505 (82.0) | 162 (78.3) | .45 |
| It would help me be healthy | | | | |
| Physically active | 341 (92.7) | 80 (96.4) | 18 (90.0) | .40 |
| Not physically active | 2363 (89.6) | 548 (89.4) | 187 (90.8) | .85 |

Table 2. Perception of Practicing Physical Activity Determined by Weight Status According to Physical Activity Practice Among Schoolchildren in the Region of Sousse During the 2009/2010 School Year.

| | Overweight | | Obese | |
|----------------------------------|------------|-------|-------|-------|
| | OR | P | OR | P |
| It would make me tired | | | | |
| Physically active | 0.85 | .53 | 1.37 | .49 |
| Not physically active | 1.29 | .005 | 1.68 | .001 |
| It would make me embarrassed | | | | |
| Physically active | 1.81 | .11 | – | – |
| Not physically active | 1.57 | <.001 | 2.17 | <.001 |
| It would be boring | | | | |
| Physically active | 0.96 | .93 | – | – |
| Not physically active | 1.26 | .05 | 1.42 | .05 |
| It would make me get hurt | | | | |
| Physically active | 1.27 | .35 | 0.56 | .31 |
| Not physically active | 1.20 | .04 | 1.25 | .11 |
| It would give me energy | | | | |
| Physically active | 1.03 | .92 | 0.66 | .52 |
| Not physically active | 0.84 | .10 | 0.69 | .02 |
| It would get or keep me in shape | | | | |
| Physically active | 0.95 | .92 | 0.54 | .43 |
| Not physically active | 0.63 | .001 | 0.41 | <.001 |

(continued)

Table 2. (continued)

| | Overweight | | Obese | |
|------------------------------------|------------|-----|-------|------|
| | OR | P | OR | P |
| It would make me better in sports | | | | |
| Physically active | 2.21 | .29 | – | – |
| Not physically active | 0.99 | .97 | 0.56 | .002 |
| It would be fun | | | | |
| Physically active | 0.59 | .16 | – | – |
| Not physically active | 0.72 | .01 | 0.55 | .001 |
| It would help me control my weight | | | | |
| Physically active | 1.09 | .81 | 0.84 | .79 |
| Not physically active | 1.02 | .87 | 0.81 | .22 |
| It would help me be healthy | | | | |
| Physically active | 2.11 | .23 | 0.71 | .66 |
| Not physically active | 0.97 | .85 | 1.14 | .61 |

Abbreviation: OR, odds ratio.

mediator of the relationship between BMI and body dissatisfaction. In conclusion, obesity proved to have adverse effects on both motor performance and physical self-perception.

Indeed, being part of a team and having opportunities to demonstrate skills in front of friends and family may be

Table 3. Perception of Practicing Physical Activity Determined by Weight Status, Adjusted by Age and Sex, According to Physical Activity Practice Among Schoolchildren in the Region of Sousse During the 2009/2010 School Year.

| | Overweight | | Obese | |
|------------------------------------|------------------|-------|------------------|-------|
| | aOR ^a | P | aOR ^a | P |
| It would make me tired | | | | |
| Physically active | 0.83 | .45 | 1.39 | .47 |
| Not physically active | 1.33 | .002 | 1.78 | <.001 |
| It would make me embarrassed | | | | |
| Physically active | 1.59 | .23 | 1.22 | .79 |
| Not physically active | 1.61 | <.001 | 2.27 | <.001 |
| It would be boring | | | | |
| Physically active | 0.87 | .76 | – | – |
| Not physically active | 1.28 | .03 | 1.49 | .03 |
| It would make me get hurt | | | | |
| Physically active | 1.24 | .39 | 0.58 | .35 |
| Not physically active | 1.23 | .02 | 1.31 | .06 |
| It would give me energy | | | | |
| Physically active | 1.19 | .65 | 0.64 | .50 |
| Not physically active | 0.84 | .10 | 0.68 | .02 |
| It would get or keep me in shape | | | | |
| Physically active | 1.03 | .95 | 0.55 | .44 |
| Not physically active | 0.63 | .001 | 0.41 | <.001 |
| It would make me better in sports | | | | |
| Physically active | 2.64 | .20 | – | – |
| Not physically active | 0.99 | .98 | 0.56 | .002 |
| It would be fun | | | | |
| Physically active | 0.67 | .30 | – | – |
| Not physically active | 0.72 | .009 | 0.53 | .001 |
| It would help me control my weight | | | | |
| Physically active | 1.13 | .73 | 0.83 | .77 |
| Not physically active | 1.02 | .84 | 0.81 | .24 |
| It would help me be healthy | | | | |
| Physically active | 2.35 | .17 | 0.78 | .76 |
| Not physically active | 0.98 | .89 | 1.15 | .55 |

Abbreviation: OR, odds ratio.

^aaOR: adjusted OR for age and sex.

particularly challenging and thus highly discouraging for obese children.¹²

A multicomponent activity program not based merely on a dose–effect approach enhances adherence of the obese children and has the potential to increase their lifelong exercise skills. Rather than focusing entirely on diet and weight loss, findings support the inclusion of interventions directed toward improving perceived physical ability that is predictive of subsequent physical activity.¹⁴

When promoting physical activity in overweight and obese adolescents, we should focus on decreasing these weight-related barriers.¹⁵ In fact, different studies didn't find differences in leisure time physical activity (excluding sport) among obese and normal-weight children, but the sport index was higher in the normal-weight compared to the overweight and obese adolescents.^{11,16,17}

A few limitations of our study can be acknowledged. Assessment of practicing recommended level of physical activity was self-reported. However, we trained interviewers to

standardize data collection and the use of accelerometer is difficult in our context among such a large sample size.

We didn't distinguish between leisure time physical activity and sport practice. Nevertheless, it appears that if children practice physical activity, they will enjoy and have better attitude and confidence.

Negative attitudes among inactive children may favor the development of a vicious circle perpetuating physical inactivity. Interrupting this concatenation of events is a central issue for promotion of physical activity among normal-weight and overweight children.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research and/or authorship of this article: This project was funded by “UnitedHealth Group” and by the Research Unit “Santé UR12SP28”: Epidemiologic transition and prevention of chronic disease.

References

1. Rennie KL, Livingstone MB, Wells JC, et al. Association of physical activity with body-composition indexes in children aged 6-8 y at varied risk of obesity. *Am J Clin Nutr.* 2005;82(1):13-20.
2. WHO. *Global Recommendations on Physical Activity for Health.* Geneva: World Health Organization; 2010.
3. Lobstein T, Frelut ML. Prevalence of overweight among children in Europe. *Obes Rev.* 2003;4(4):195-200.
4. Jolliffe D. Extent of overweight among US children and adolescents from 1971 to 2000. *Int J Obes Relat Metab Disord.* 2004;28(1):4-9.
5. Ajzen I, Fishbein M. *Understanding Attitudes and Predicting Social Behavior.* Englewood Cliffs, NJ: Prentice-Hall; 1980.
6. Tsiros MD, Olds T, Buckley JD, et al. Health-related quality of life in obese children and adolescents. *Int J Obes.* 2009;33(4):387-400.
7. Franklin J, Denyer G, Steinbeck KS, Caterson ID, Hill AJ. Obesity and risk of low self-esteem: a statewide survey of Australian children. *Pediatrics.* 2006;118(6):2481-2487.
8. Romanella NE, Wakat DK, Loyd BH, Kelly LE. Physical activity and attitudes in lean and obese children and their mothers. *Int J Obes Relat Metab Disord.* 1991;15(6):407-414
9. Lobstein T, Jackson-Leach R. Estimated burden of paediatric obesity and co-morbidities in Europe. Part 2. Numbers of children with indicators of obesity-related disease. *Int J Pediatr Obes.* 2006;1(1):33-41.
10. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition for child overweight and obesity worldwide: international survey. *BMJ.* 2000;320(7244):1-6.
11. Deforche BI, De Bourdeaudhuij IM, Tanghe AP. Attitude toward physical activity in normal -weight, overweight and obese adolescents. *J Adolesc Health.* 2006;38(5):560-568.
12. Valerio G, Gallarato V, D'Amico O, et al. Perceived difficulty with physical tasks, lifestyle, and physical performance in obese children. *Biomed Res Int.* 2014;2014:735764.

13. Morano M, Colella D, Robazza C, Bortoli L, Capranica L. Physical self-perception and motor performance in normal-weight, overweight and obese children. *Scand J Med Sci Sports*. 2011; 21(3):465-473.
14. Morano M, Colella D, Rutigliano I, Fiore P, Pettoello-Mantovani M, Campanozzi A. Changes in actual and perceived physical abilities in clinically obese children: a 9-month multi-component intervention study. *PLoS One*. 2012;7(12):e50782.
15. Pierce JW, Wardle J. Cause and effect beliefs and self-esteem of overweight children. *J Child Psychol Psychiatry*. 1997;38(6): 645-650.
16. Huttunen NP, Knip M, Paavilainen T. Physical activity and fitness in obese children. *Int J Obes Relat Metab Disord*. 1986;10(6):519-525.
17. Garaulet M, Martinez A, Victoria F, et al. Differences in dietary intake and activity level between normal-weight and overweight or obese adolescents. *J Pediatr Endocrinol Metab*. 2000;30(3): 253-258.

Author Biographies

Jihene Maatoug is a graduate in the Faculty of Medicine of Tunis, in Tunisia and has a master degree in Public Health in France. Also, she is working as an assistant professor in Community Medicine in the department of Epidemiology and in the Faculty of Medicine of Sousse. Her research interests are in prevention of non communicable disease and their risk factors. She is also teaching epidemiology and biostatistics in the Faculty of Medicine of Sousse for medical students and internship.

Imed Harrabi is a graduate in the Faculty of Medicine of Monastir, in Tunisia and has a master degree in Public Health. He is an associate professor in Preventive Medicine in the department of Epidemiology and in the Faculty of Medicine of Sousse. His research interests are in prevention of tobacco use. He is teaching epidemiology and biostatistics in the Faculty of Medicine of Sousse to medical students.

Jihene Sahli, has graduated as Medical Doctor from the University of Medicine of Sousse (Tunisia) in 2007. She obtained a diploma of occupational health of the University of Medicine of Tunis (Tunisia) in 2012. She is a resident in public health since January 2014. She obtained a diploma in statistics, epidemiology and clinical research from the University of Medicine of Tunis (Tunisia) in 2015. She's following a professional master in quality of healthcare and management of health services. Her fields of interest are the promotion of health, the prevention of the non communicable diseases and the management of healthcare services.

Olfa Ezzi, born in Monastir (Tunisia) in February 16, 1984. Resident in Community and Preventive Medicine at the department of epidemiology, University hospital Farhat Hached Sousse, Tunisia. Graduated in Faculty of Medicine from Medicine of Monastir. She is interested in Public Health and how to improve population health. Her research interests lie in the field of Non Communicable Diseases risk factors.

Dhekra Chebil, Born in July 25, 1984 in Monastir, Tunisia. Studied and graduated from the University of Medicine of Monastir. Resident in Preventive and Community Medicine at the department of epidemiology, university hospital Farhat Hached, Sousse, Tunisia. Interested in Healthcare Quality Improvement, public health, and epidemiology. Current work focuses on research on chronic diseases risk factors and promoting healthy lifestyles.

Mariem Gaddour, born in Sousse November 3, 1988. Resident in physical medicine and functional reeducation, has a National Doctorate in Medicine from Ibn Jazzar medical university of sousse, Tunisia. Currently, she's doing a 6-month internship at the Department of Epidemiology at Farhat Hached hospital, Sousse, Tunisia. In addition to medical studies, she is interested in health care quality improvement.

Nesrine Saadi, a 26 year old Tunisian doctor, recently graduated with high honors in Faculty of Medicine from Sousse, Tunisia. During her internship at the Department of Epidemiology, University Hospital Farhat Hached, Sousse, Tunisia, she gained valuable experience in the field of public health and Epidemiology. In this regard, she has presented her Medical Doctoral Dissertation entitled “*Obesity and overweight in schools in Sousse governorate: Prevalence and determinants*”.

Hassen Ghannem, is MD, MSc, Professor, Faculty of Medicine of Sousse Tunisia. He is currently Professor of Community Medicine in the Faculty of Medicine of Sousse and head of the Department of Epidemiology at the University Hospital Farhat Hached. He is a graduate in Faculty of Medicine of Sousse and also holds a Master degree of Community Health from the Faculty of Medicine, University of Montreal, Canada. His research projects include the study of the epidemiological transition and prevention of chronic diseases and the evaluation of health research and capacity building in developing countries. He is leading the “Chronic Disease Prevention Research Centre of Sousse, Tunisia” for the UnitedHealth Group & NHLBI (National Heart, Lung and Blood Institute/NIH) chronic disease initiative. <http://www.nhlbi.nih.gov/about/org/globalhealth/centers/tunisia-center-of-excellence.htm>. He is also a senior consultant to the Council on Health Research for Development (COHRED) and to the WHO/EMRO where he is member of the Advisory Committee on Health Research (ACHR).