Abstract

This study was done to find the prevalence of risk factors for non-communicable diseases (NCDs) in school going adolescents. Secondary data analysis was done of the data collected for development of questionnaire for adolescents. The data was collected from the adolescents (10-19 years of age) attending OPD of Kalawati Saran Children’s Hospital, New Delhi or attending schools. The data related to NCD risk factors were analyzed and is presented here. Total 672 adolescents were included in the study. Six questions were asked on risk factors for NCDs. Nearly 2/3 adolescents are not active enough physically, only half were having fruits and vegetables in diet 5 times a week, and about a quarter were genetically predisposed for NCDs. About 10% adolescents had thoughts of ending life in the previous month and nearly half of it made at least one attempt to end life. NCDs begin during adolescence and the risk factors can be identified early. This gives an opportunity to modify risk factors to avoid or delay the NCDs in adults.

Keywords: Adolescents, Risk factors, Non-communicable diseases, Unhealthy behaviors, Physical inactivity

Introduction

Non-communicable diseases (NCDs) cause 41 million deaths each year which amounts to 71% of all deaths; of these 15 million are premature deaths (between 30 and 69 years of age) and 85% of these premature deaths occur in low- and middle-income countries like India.1 Greater than 50% of these deaths were associated with behaviors that often begin or get reinforced during adolescence, including poor eating habits, lack of physical activity, and use of tobacco and alcohol.2 Almost ¾ of obese adolescents remain obese when they grow up as adults thus increasing their risk of heart disease, diabetes (type-2), stroke and cancers.3,6 Exposure to HPV during adolescence increases risk of cervical cancer in adult women.6 Most (90%) adult smokers began smoking during adolescence.7 One is five times more likely to develop chronic alcohol dependence if he/she starts drinking below 19 years of age.8 Global Burden of Disease Study (2015) found that the modifiable behaviors (tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol) increase the risk of NCDs.9 A recent study in Brazil found clustering of two or more risk factors (physical inactivity, sedentary behavior and unhealthy diet) in almost all (96.3%) of the studied adolescents.10 Elimination of lifestyle risk factors could prevent 80% of deaths due to heart disease, stroke, and type-2 diabetes and 40% of deaths due to cancers.11 Schools are uniquely placed for prevention of behaviors that underlie NCDs. Schools can have programs to provide young persons and their families information and life skills required to promote healthy behaviors. Knowledge of prevalence of the risk factors in school students for development of NCDs in adult life is an important pre-requisite for formulating effective interventions.

Corresponding Author: Dr. Harish K Pemde, Center for Adolescent Health, Director Professor Department of Pediatrics, Kalawati Saran Children’s Hospital, Lady Hardinge Medical College, New Delhi-110001.
E-mail Id: harishpemde@gmail.com
Orcid Id: https://orcid.org/0000-0002-6605-1041
How to cite this article: Harish K, Pemde HK, Rajendran S et al. Screening Adolescents for Risk Factors for Development of Non-Communicable Diseases. Ind J Youth Adol Health 2018; 5(2): 21-24.
College, New Delhi, India, has developed a tool to screen adolescents for presence of various physical and mental illnesses and also the risk factors for NCDs. Prevalence of risk factors for NCDs in school-going adolescents is being reported in this paper.

Methods

This study is secondary data analysis using the data collected for testing a screening questionnaire for adolescents during 2012-13. The data was collected from the adolescents (10–19 years of age) attending OPD of KSCH or attending schools in 2014 using same questions. Adolescents having acute sickness, mental sub-normality, or inability to read or write English or Hindi language were excluded.

The adolescents were instructed to fill the questionnaire after providing them adequate privacy and assurance of confidentiality. Study team members helped if any part could not be understood by the adolescent. The filled tools were stored separately. The Chronbach's alpha of the tool is 0.83. The study subjects were interviewed using HEADS to identify any need for medical evaluation.

A debriefing form was prepared to be given to the participant after filling of the questionnaire and interview. It mentioned the health status of the adolescent along with comments from psychologist and scientist for further medical/counseling requirements, if needed.

The data related to NCD risk factors (as provided by adolescents in written proforma/tool) was analyzed and is presented here.

Continuous variables were analyzed using mean and standard deviation. Categorical variables were analyzed using percentages and proportions. SPSS (Statistical Package for Social Sciences) version 12.0 was used for data analysis.

Results

Six questions were asked on risk factors for NCDs (Table 1). It was found that about 2/3 adolescents were not active enough physically, only half were having fruits and vegetables in diet five times a week, and about a quarter were genetically predisposed for NCDs. Use of tobacco and alcohol was reported more in 2014.

About 10% adolescents had thoughts of ending life in the previous month and nearly half of them made at least one attempt to end life (Table 2). Many adolescents felt the need for counselor or doctor.

| Questions Asked                                                                 | Affirmative Response in 2012-13 (n=372) | Affirmative Response in 2014 (n=300) |
|---------------------------------------------------------------------------------|----------------------------------------|--------------------------------------|
| Do you exercise or participate in outdoor games at least five days a week?      | 107 (28.76%)                           | 130 (43.33%)                         |
| Do you watch TV/computer or spend time on mobile for more than two hours per day? | 159 (42.74%)                           | 142 (47.33%)                         |
| Do you consume fruits, fruit juices or green leafy vegetables in your routine diet at least five days a week? | 183 (49.19%)                           | 151 (50.33%)                         |
| Does anybody in your family (parents, siblings, grandparents or maternal grandparents, etc.) have high blood pressure, diabetes, or any heart disease? | 113 (30.37%)                           | 78 (26%)                             |
| Do you consume any kind of tobacco (bidi, cigarette, hookah, gutkha, etc.)?    | 3 (0.80%)                              | 27 (9%)                              |
| Do you consume any kind of alcohol (beer, whisky, vodka, etc.) or drugs (ganja, charas, etc.)? | 3(0.80%)                               | 17 (5.66%)                           |
Discussion

NCDs have their root in unhealthy behaviors during adolescence. Such behaviors are needed to be identified early enough to have primordial prevention of NCDs. In our study, adequate physical activity was found in 28–43% of adolescents, and nearly half were having sedentary habits and unhealthy diets. About 30% had genetic predisposition for NCDs. Tobacco and alcohol use was very low.

Other studies in India, Palestine, and Pakistan also used self-filled questionnaires and found lifestyle risk factors in even higher proportion of adolescents. A study in Pakistan found 80% of adolescents ate unhealthy diets, 54% were physically inactive. Only 3.1% of adolescents were without any lifestyle risk factor. A Palestine study found low fruit and vegetable consumption (90%), tobacco use (32.2%) and high levels of physical inactivity (84.6%) as three most common risk factors in adolescents. One study in India documented inappropriate dietary practices (fast food consumption, low fruit consumption), low physical activity, higher level of experimentation with alcohol and to a lesser extent smoking, high prevalence of obesity and hypertension in the school children. One recent study on school children in Sri Lanka found that 43% consumed a healthy diet, 20% engaged in adequate physical activity, 3% of students were current smokers and 12% current alcohol users.

One study in Bangalore found that 25.4% of the adolescents had suicidal ideation (past 3 months), suicide attempt (lifetime) 12.9% and 6% in past 3 months, and 12.9% expressed their need for seeking help. Another study from West Bengal found suicidal ideation and attempts 11.7% and 3.5% of the students.

In addition to community at large, school-based interventions are required to identify and manage risk factors (in adolescents) to reduce the morbidity and mortality (in adults) associated with non-communicable diseases. A systemic review found that schools can be a good setting for initiating positive changes in reducing NCD risk factors. Intervention consisting of a school component (policies), a classroom component (activities) and a family component (information, education and communication material), was useful in improving knowledge and practices related to physical activity, diet and tobacco use in rural North Indian schools.

This study had certain limitations as this study analyzed the data collected for development and validation of a questionnaire. Adolescents from a few schools could be included.

Adolescents with behavioral risk factors can be identified using a questionnaire which in turn provides data for planning and implementing interventions at school level and also at clinics to make the facilities available for counseling and management of risk factors detected during this process.

Conflict of Interest: None

References

1. Non-communicable diseases – Key facts [Internet]. World Health Organization 2018 [cited 1 Jun 2018]. Available from http://www.who.int/news-room/factsheets/detail/noncommunicable-diseases.
2. The world health report 2002: Reducing risks, promoting healthy life [Internet]. World Health Organization 2018 [cited 1 June 2018] Available from: http://www.who.int/health-topics/healthy-lifestyle/nutrition/factsheets/detail/en/
3. Dehghan M, Akhtar-Danesh N, Merchant TA. Childhood obesity, prevalence and prevention. Nutrition Journal 2005; 4(1): 24.
4. Nicklas TA, Baranowski T, Cullen KW et al. Eating patterns, dietary quality and obesity. Journal of the American College of Nutrition 2001; 20: 599-608.
5. Whitaker RC, Wright JA, Pepe MS et al. Predicting obesity in young adulthood from childhood and parental obesity. N Engl J Med 1997 Sep 25; 337(13): 869-73.
6. Monk BJ, Wiley DJ. Will widespread human papillomavirus prophylactic vaccination change sexual practices of adolescent and young adult women in America? Obstet Gynecol 2006 Aug;108(2):420-4.
7. Youth Tobacco Surveillance – United States. 2000 [Internet]. CDC.gov. 2018 [cited 1 Jun 2018]. Available from: http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adolescent_youth/pdf/adolescent_youth.pdf.
8 DeWit DJ, Adlaf EM, Offord DR et al. Age at first alcohol use: a risk factor for the development of alcohol disorders. *Am J Psychiatry* 2000 May; 157(5): 745-50.

9 GBD 2015. Risk Factors Collaborators. Global, regional, and national comparative risk assessment of 79 behavioral, environmental and occupational, and metabolic risks or clusters of risks, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet* 2016; 388(10053): 1659-1724.

10 Nunes HEG, Gonçalves ECdA, Vieira JAJ et al. Clustering of risk factors for non-communicable diseases among adolescents from Southern Brazil. *PLoS ONE* 2016; 11(7): e0159037.

11 10 facts about chronic disease [internet]. Who.int. 2018 [cited 1 Jun 2018] Available from: http://www.who.int/features/factfiles/chp/01_en.html.

12 Khuwaja AK, Khawaja S, Motwani K et al. Preventable lifestyle risk factors for non-communicable diseases in the Pakistan Adolescents Schools Study 1 (PASS-1). *J Prev Med Public Health* 2011 Sep; 44(5): 210-17.

13 Ghrayeb FAW, Rusli AM, Rifai AA et al. Non-communicable diseases behavioral risk factors among Palestinian adolescents: A descriptive study from a rural community of Tarqumia. *World Journal of Medical Sciences* 2014; 10 (3): 267-74.

14 Singh AK, Maheshwari A, Sharma N et al. Lifestyle associated risk factors in adolescents. *Indian J Pediatr* 2006 Oct; 73(10): 901-06.

15 Jayawardana PL. Knowledge of non-communicable diseases and practices related to healthy lifestyles among adolescents, in state schools of a selected educational division in Sri Lanka. *BMC Public Health* 2018; 18: 64.

16 Bhola P, Rekha DP, Sathyanarayanan V et al. Self-reported suicidality and its predictors among adolescents from a pre-university college in Bangalore, India. *Asian J Psychiatr* 2014 Feb; 7(1): 38-45.

17 Mukhopadhyay DK, Mukhopadhyay S, Sinhababu A et al. Are the adolescent behaviors too risky? A school-based study in a district of West Bengal, India. *J Trop Pediatr* 2012 Dec; 58(6): 496-500.

18 Singh A, Bassi S, Nazar GP et al. Impact of school policies on non-communicable disease risk factors – A systematic review. *BMC Public Health* 2017 Apr 4; 17(1): 292.

19 Saraf DS, Gupta SK, Pandav CS et al. Effectiveness of a school based intervention for prevention of non-communicable diseases in middle school children of rural North India: A randomized controlled trial. *Indian J Pediatr* 2015 Apr; 82(4): 354-62.