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*Cardiovascular disease risk factors in the population
of secondary school students in Ciechanów*

Cardiovascular diseases are treated as social diseases occurring in Poland. They cause ca. 48% deaths in the general population and are the most frequent reason for hospitalization of men. They also constitute one of the major causes of sickness absenteeism and legal disability. A large group of cardiovascular disease risk factors is connected with our lifestyle so we can prevent them. These are: increased cholesterol level and other lipid disturbances, arterial hypertension, smoking, alcohol abuse, wrong diet, obesity, too little physical activity and psychical stress (3). The unfavourable effects of all these factors increase with years and lead to the occurrence of cardiovascular diseases with full symptoms – mainly coronary heart disease and myocardial infarction (4). Health promoting behaviour is formed from the years of early childhood under the influence of knowledge and patterns handed down in families, or presented at school, in peer groups and the mass media. The health promoting behaviour of young people will influence the health state of the whole society in the nearest future. Getting acquainted with these types of behaviour makes it possible to prepare preventive programmes aimed at decreasing the frequency of occurrence of cardiovascular diseases and their negative consequences.

The aim of this paper was to determine the frequency of occurrence of cardiovascular disease risk factors among the secondary school students in Ciechanów.

MATERIAL AND METHODS

The study comprised 150 students attending high school, mechanical technical secondary school and a vocational school complex in Ciechanów (province of Mazovia). All the examined students were 17–18 years of age. In the examined group there were 52.7% women and 47.3% men. 48% of the polled persons lived permanently in the country, 52% lived permanently in town. Most of the examined students (90%) came from full families, i.e. were raised by both their parents.

The study was in the form of an auditory questionnaire. It was conducted in February 2002. The main part of the questionnaire consisted of 27 questions (open, half-open, and closed questions, as well as questions with cafeteria. To evaluate the state of students' nourishment we used the so-called body mass index, which is calculated according to the following formula: $BMI = \text{mass (kg)} : \text{height (m}^2\text{)}$. For the needs of this paper, to examine the amounts of alcohol

consumed, the following conversion factor was used: standard portion = 10g pure ethanol. The results were analyzed in accordance with the sex of the examined persons.

RESULTS

In 67.3% of the examined persons (64.9% women and 70.4% men) no inherited susceptibility to cardiovascular diseases was found. 32.7% of the examined persons (35.4% women and 29.6% men) reported that these diseases occurred in members of their immediate family. None of the examined students admitted to suffering from diabetes. The state of nourishment of the polled students is shown in Table 1. In the examined population of students obesity occurrence was not found. 83.3% of the examined persons had already had their arterial blood pressure measured at least once. The results were contained within the normal range (according to WHO the standard is up to 135 mm Hg – systolic pressure and up to 85 mm Hg – diastolic pressure). 16.7% teenagers had never had their arterial blood pressure measured.

Table 1. State of nourishment of the polled persons according to BMI

| BMI | 0–18.5 kg/m ² underweight | 18.5– 4.9 kg/m ² standard | 25– 9.9 kg/m ² overweight |
|-------|---|---|---|
| Women | 11.4% | 82.3% | 6.3% |
| Men | 12.7% | 69.0% | 18.3% |
| Total | 12.0% | 76.0% | 12.0% |

When analyzing the young people's answers to questions concerning smoking, one can find that 33.3% students have never smoked, 26% smoked in the past. 12.7% smoke occasionally, and 28% (24.1% girls and 32.4% boys) smoke every day. The everyday tobacco smokers usually smoked 5 to 10 cigarettes a day. Only 8 persons (5.3% of the total population of students) admitted to smoking 15–20 cigarettes a day. The age of commencing of regular smoking by the polled persons varied from 15 to 17 years of age. The non-smoking students were asked if they avoided being in places where people smoked in order not to be exposed to passive smoking. Persistent avoidance of being exposed to passive smoking was declared by

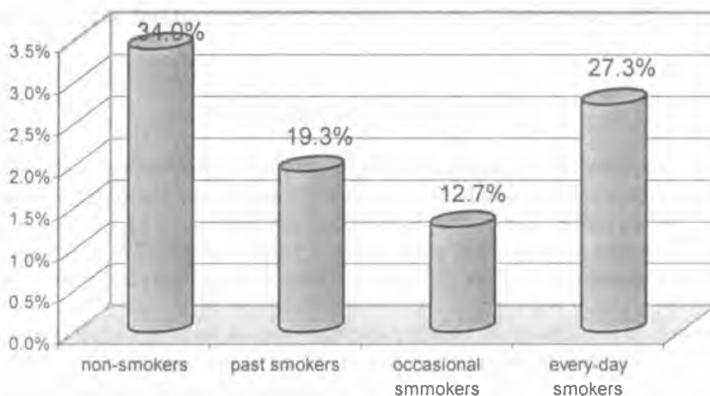


Fig. 1. Spread of smoking in the examined population

less than a half of the student population (44.9%), while the rest did not pay attention to the fact that they were in the air filled with tobacco smoke, or they did not answer this question. The frequency of alcohol consumption by the examined students is presented in Figure 2. 11.3% of

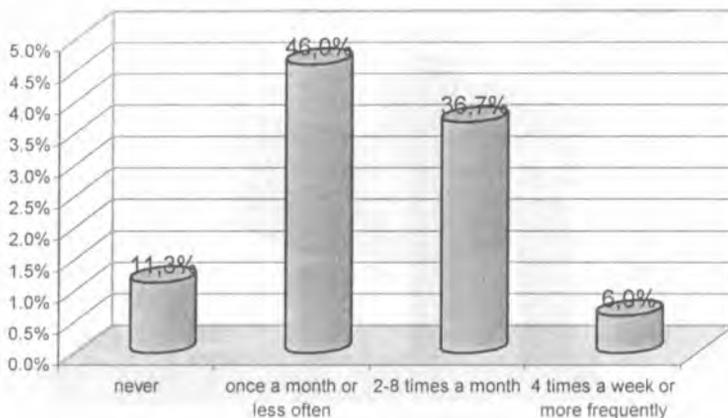


Fig. 2. Frequency of alcohol consumption

the total examined population (13.9% women and 8.5% men) had never drunk alcohol, 46% drank alcohol once a month or less frequently. 36.7% of the polled persons drank alcoholic drinks from 2 to 8 times a month, drinking 9.45 standard portions on average. 6% of students (2.5% women and 9.9% men) consumed alcohol 4 and more times a week, drinking 9.45 standard portions on average. Then the polled persons were asked at what age they had drunk alcohol for the first time. Most students (58.7% of the total population) started drinking alcohol at 15–16 years of age, but two persons (1.3% of the total) reported that they had consumed their first portion of alcohol as early as at the age of 10.

The next group of questions in the questionnaire concerned the physical activity of the polled persons. 12.7% students (15.2% women and 9.9% men) regarded the level of their physical activity as high, almost three fourths of the polled persons (74%) – as moderate, and 13.3% of the total population – as low (18.8% men and 8.9% women). Almost half of the polled persons (48.7%) accomplish their physical activity within their Physical Education classes and exercises done on their own, 36.7% exclusively within PE lessons, and 14.7% – within PE lessons and frequent physical work. The main form of physical activity preferred by girls was slow and brisk walking, next, successively, there were: dancing, gymnastics at home and cycling. Slow and brisk walking was also the favourite form of boys' physical activity. Exercises at the gym, cycling and gymnastics at home were also quite popular among them.

More than a half of the polled group had breakfast, lunch and supper every day (respectively: 57.3%, 74%, 57.3%). Only 1.3% of them regularly went to school without breakfast, and 41.3% of young people sometimes did so. As the foods constituting the basis of their everyday diet, the students first mentioned cereals, fruit and vegetables and boiled potatoes. The analysis of results according to sex reveals that men significantly more often ate fat meat (men: 26.8%, women: 12.7%) and fat pork-butcher's meat (men – 32.4%, women – 20.3%). Half of the polled students ate raw fruit and vegetables 2–3 times a week, 27.3% did it every day, and 17% once a week. The examined young people ate salty dishes and snacks definitely less often. 9.3% respondents ate them every day, 14% – 2–3 times a week, 30% – once a week, 34.7% – less than once a week, and 12% students – never. Fast food (chips, hamburgers, pizza, casseroles) was eaten every day by 5.3% of the polled people (three times more often these were men). 18% polled

students ate such dishes 2–3 times a week. Chips, hamburgers and pizza were eaten once a week by 26.7% respondents, less often than once a week – by 36.7%, and 13.3% of the examined

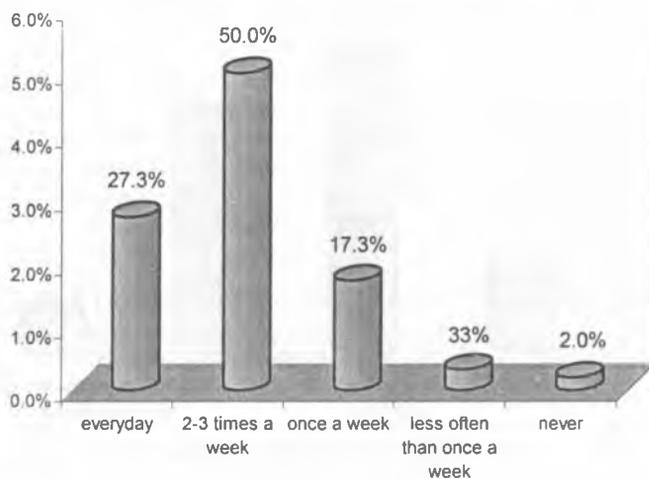


Fig 3. Eating raw fruit and vegetables by young people

population declared that they never ate fast food. 6.7% examined students (12.7% boys) admitted to drinking strong (natural) coffee.

The subsequent questions in the questionnaire concerned stress situations in the lives of the examined young people. The exposure of students to stress situations at home is illustrated by Figure 4, and at school – Figure 5.

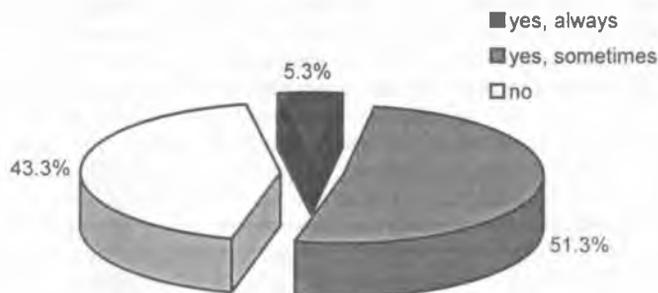


Fig. 4. Exposure to stressful situation at home

More than half of the young people are exposed to stressful situations at home (including 5.3% –constantly, and 51.3% – sometimes). Boys almost twice as often as girls declared constant exposure to stress at their family homes. The percentage of students reporting exposure to stress situations at school was significantly higher and equalled 84.7%. Constant stress

situations at school was admitted by 24.7% of the examined persons, whereas the answer: "yes, I sometimes experience stress at school" was given by 60% respondents. More than twice as many boys as girls stated that school is constantly a source of stress for them.

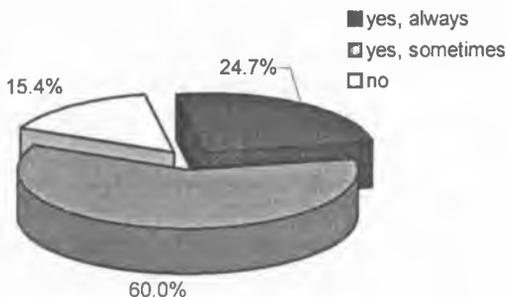


Fig. 5. Exposure to stressful situation at school

Then a few features characteristic of type A personality were listed (excessive ambition, high need of achievement, laboriousness, tendency to competitiveness, energy, hurry, impatience) and the students were asked if they could see such personality traits in themselves. Almost three fourths of the examined students (74.6%) regarded themselves as ambitious, very laborious and aiming at achieving success (answers: "definitely yes" and "yes, I think so"). The others (25.4%) did not attribute such personality features to themselves.

DISCUSSION

In 67.3% of the examined students inherited susceptibility to cardiovascular diseases was not revealed. In the examined student population the occurrence of obesity or diabetes was not found. In all students who have had their arterial blood pressure measured at least once (83.3% of the total population), the results were within the normal range. 28% students (24.1% girls and 32.4% boys) admitted to smoking tobacco every day, whereas 12.7% of the examined population smokes occasionally. This indicates much greater prevalence of nicotine among secondary school students in Ciechanów compared with the secondary school students of the district of Tarnów, where, according to Niziołek et al. (2) 12% students smoke every day. The all-Polish studies of Woynarowska et al (6.7), carried out in 1998, also revealed a lower percentage (18%) of secondary school students who smoked every day. In both these studies the percentage of boys who smoked every day was higher than that of girls. Also, juxtaposition of the results with the studies of tobacco smoking frequency among high school students in Lublin in the year 1999 (8) informs about higher intensity of nicotine among secondary school students in Ciechanów. The percentage of young people trying to avoid passive smoking is also higher in the secondary schools of Lublin.

11.3% of the total examined population (13.9% women and 8.5% men) never drank alcohol, 46% drank alcohol once a month, or less frequently. 6% students (2.5% women and 9.9% men) consumed alcohol 4 or more times a week, drinking 9.45 standard portions on average. Compared to that, in the studies by Niziołek et al. (2), 19% secondary school students in the district of Tarnów admitted that they had never had anything to do with alcohol, and the percentage of absolute teetotallers in Woynarowska's all-Polish studies (7) was 8% among boys and 9% among girls.

Almost half of the polled secondary school students from Ciechanów (48.7%) accomplish their physical activity within Physical Education classes and while doing exercises on their own, 36.7% – exclusively during PE lessons, and 14.7% – within PE lessons and during frequently done physical work. The main form of physical activity preferred both by boys and girls was slow and brisk walking. 13.3% students evaluated the level of their physical activity as slow. This result converges with that obtained by Niziołek (2).

Only 1.3% students go out to school without having had breakfast before, and 43.1% young people occasionally do so. 27.3% eat raw fruit and vegetables every day. These results are convergent with those reported by some authors (2,7). However, in the studies by Chemperek et al. (1), concerning the style of nutrition among young people attending secondary schools in Lublin, much larger percentage of students going to school without having eaten breakfast before was reported (always – 15.1%, sometimes – 31%).

The frequency of eating fast foods and drinking strong coffee was, in turn, slightly lower in the examined population of students from Ciechanów than that revealed in the all-Polish studies by Woynarowska et al. (7).

More than a half of the polled young people are exposed to stressful situations at home (including 5.3% – regularly, and 51.3% – sometimes), while 84.7% are exposed to stressful situations at school (including 24.7% – regularly, and 60% – sometimes). Boys twice as often as girls reported constant stresses, both at school and at home. 74.6% of the examined students noticed in themselves type A personality features, predisposing to ischaemic heart disease.

CONCLUSIONS

1. Among the examined students no cases of obesity or diabetes were found. One third of the polled persons had inherited susceptibility to cardiovascular diseases.

2. 27.3% of the polled secondary school students smoke cigarettes every day (usually 5–10 a day). This fact increases the risk of cardiovascular diseases.

3. The problem of alcohol abuse concerned 6% students, but only every tenth of them declared being a teetotaler.

4. Three fourths of the polled persons regarded the level of their physical activity as moderate. About one third of the examined students accomplish their physical activity exclusively within Physical Education classes. The form of exercise done on their own most frequently was slow and brisk walking.

5. The students usually nourish regularly, eating breakfast, lunch and dinner every day. They eat fruit, cutting down on animal fats and salt.

6. Most of the examined students are exposed to stressful situations, both in their home environment (56.6%) and at school (84.7%). Long-lasting and overlapping stress intensifies the risk of occurrence of cardiovascular diseases. More than a half of the polled persons ascribe to themselves type A personality features, which makes them more susceptible to coronary heart disease than type B personality.

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SUMMARY

The aim of this paper was to determine the frequency of occurrence of cardiovascular disease risk factors among the secondary school students in Ciechanów. The study comprised 150 students attending high school, mechanical technical secondary school and a vocational school complex in Ciechanów (province of Mazovia). All the examined students were 17–18 years of age. The study was in the form of an auditory questionnaire. It was conducted in February 2002. To evaluate the state of students' nourishment we used the so-called body mass index (BMI). For the needs of this paper, to examine the amounts of alcohol consumed, the following conversion factor was used: standard portion = 10g pure ethanol. The results were analyzed in accordance with the sex of the examined persons. Among the examined students no cases of obesity or diabetes were found. One third of the polled persons had inherited susceptibility to cardiovascular diseases. 27.3% of the polled secondary school students smoke cigarettes every day (usually 5–10 a day). This fact increases the risk of cardiovascular diseases. The problem of alcohol abuse concerned 6% students, but only every tenth of them declared being a teetotaler. Three fourths of the polled persons regarded the level of their physical activity as moderate. About one third of the examined students accomplish their physical activity exclusively within Physical Education classes. The form of exercise done on their own most frequently was slow and brisk walking. The students usually nourish regularly, eating breakfast, lunch and dinner every day. They eat fruit, cutting down on animal fats and salt. Most of the examined students are exposed to stressful situations, both in their home environment (56.6%) and at school (84.7%). Long-lasting and overlapping stress intensifies the risk of cardiovascular diseases. More than a half of the polled persons ascribe to themselves type A personality features, which makes them more susceptible to coronary heart disease, than type B personality.

Czynniki ryzyka chorób układu krążenia w populacji uczniów szkół ponadgimnazjalnych Ciechanowa

Celem pracy było określenie częstości występowania czynników ryzyka chorób układu krążenia wśród uczniów szkół ponadgimnazjalnych Ciechanowa. Badaniem objęto 150 uczniów uczęszczających do liceum ogólnokształcącego, technikum mechanicznego i zespołu szkół zawodowych w Ciechanowie (województwo mazowieckie). Wszyscy badani uczniowie byli w wieku 17–18 lat. Badanie miało formę ankiety audytoryjnej. Przeprowadzono je w lutym 2002 roku. Do oceny stanu odżywienia uczniów posłużono się tzw. wskaźnikiem masy ciała (BMI). Do potrzeb pracy w badaniu ilości spożywanego alkoholu zastosowano następujący przelicznik: porcja standardowa = 10g czystego alkoholu etylowego. Otrzymane wyniki analizowano w zależności od płci badanych. Wśród badanych uczniów nie stwierdzono występowania otyłości i cukrzycy. Obciążenie dziedziczne w kierunku chorób układu krążenia było obecne u jednej trzeciej ankietowanych. 27,3% uczniów szkół ponadgimnazjalnych pali papierosy, wypalając zazwyczaj od 5 do 10 sztuk papierosów dziennie. Fakt ten zwiększa ryzyko zachorowania na choroby układu krążenia. Nadmierne spożycie alkoholu dotyczyło 6 % uczniów, ale tylko co dziesiąty uczeń deklarował całkowitą abstynencję alkoholową. Trzy czwarte ankietowanych uznało poziom swojej aktywności fizycznej za umiarkowany. Około jedna trzecia badanych realizuje aktywność fizyczną wyłącznie w ramach zajęć wychowania fizycznego. Formą ruchu uprawianą najczęściej samodzielnie przez badanych jest wolny i szybki spacer. Ucząca się młodzież odżywia się w większości regularnie, jadając codziennie śniadanie, obiad i kolację, spożywa owoce, ogranicza spożycie tłuszczów zwierzęcych i nie nadużywa soli kuchennej. Większość badanych uczniów jest narażona na sytuacje stresowe zarówno w środowisku domowym (56,6%), jak i szkolnym (84,7%). Długotrwały i nakładający się na siebie stres potęguje ryzyko wystąpienia chorób układu krążenia. Ponad połowa ankietowanych przypisuje sobie cechy osobowości typu A, która bardziej naraża na chorobę wieńcową niż typ osobowości B.