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THE RELATIONSHIP BETWEEN SOCIOECONOMIC STATUS AND ADOLESCENT HEALTH BEHAVIOR: A PILOT STUDY IN KAZAKHSTAN



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The relationship between socioeconomic status (SES) and adolescent health has been a major source of concern in the field of public health. In this study, the Family Affluence Scale II (FAS II) was used to measure the SES of the participants in order to examine the relationship between the family's SES and certain indicators of adolescent health and behavior.

Study objective. The objective of the study is to examine relationship between family SES and certain indicators of adolescent health behavior using the FASII scale.

Material and methods. We used data from the Health Behavior in School-Aged Children (HBSC) survey of children aged 11, 13, and 15 years in Aktobe. The variables used to measure health and health related behavior in the participants included health self-assessment, life satisfaction, multiple health complaints, number of injuries requiring medical attention, everyday breakfast, consumption of fruits, soft drinks on a daily basis, physical activity, frequency of brushing teeth, and smoking tobacco. The affluence of the participants was measured using the FAS II. Correlation and odds ratios (OR) methods were used for data analysis.

Results and discussions. Boys with higher scores on the FAS II were more likely to have higher life satisfaction (OR 0.47, CI 0.25-0.9, $p < 0.05$), to eat fruits on a daily basis (OR 1.69, CI 1.06-2.69, $p < 0.05$), and to have injuries treated by medical staff (OR 2.14, CI 1.36-3.38, $p < 0.01$). Girls with higher scores on the FAS II were more likely to brush their teeth more than once a day (OR 0.44, CI 0.27-0.73, $p < 0.01$). There was no significant relationship between the FAS II scores and the selected indicators of health and behavior.

Conclusions. The result of the study indicates that FASII scores and health indicators in boys and girls were weakly correlated in the pilot sample. Further research is required to understand the relationship between family affluence and health indicators based on national data.

Key words: health inequalities, family affluence scale, health behaviors, adolescents, health behavior in school-aged children (HBSC), socioeconomic status.

Many health-related behaviors and conditions are formulated during adolescence. Poor health and health behaviors/attitudes among young people could have serious impact on the health into adulthood [1-4]. In Kazakhstan, the rates of adolescent major health risks has been increased. Currently, more than half of the adolescents have been diagnosed with chronic condition [5, 6]. In this regards, an issue of young people health protection and promotion has high social and public health priority for the country.

The health is determined to a significant degree by socioeconomic factors. Socioeconomic conditions contribute to widespread health inequalities. Examination, prevention, and reduction of social inequalities in health are a key issue in the public health sector [7, 8]. The relationship between socioeconomic status (SES) and adolescent health have become a major source of concern in recent decades [9, 10, 11]. The Family Affluence Scale (FAS) is one of the measures of familial socioeconomic status based on data collected from children [12, 13, 14]. The FAS was developed in the Health Behavior in School-Aged Children (HBSC) pilot study [9] as a measure to examine the relationship between SES and adolescent health. Over a period of time, this measure has been revised due to the evolving social conditions and technology [15] and the latest version is the FAS III. Although the FAS II has received many critical reviews, some studies show that it has moderate reliability and validity [12, 13, 16, 17, 18].

The FAS II has been widely used in the US, Canada, Israel,

China, South Korea, and many European countries [19-23]. As research data on SES and the adolescent population in Kazakhstan is not available, there is a need to study the relationship between familial affluence and adolescent health and behavior in this context.

Our aim was to examine relationship between family SES and certain indicators of adolescent health behavior using the FASII.

The following aspects of health from HBSC data were used: health self-assessment, life satisfaction, multiple health complaints, injury, everyday breakfast, daily fruit and soft drink consumption, oral health, tobacco use, and physical activity among adolescents.

Socioeconomic disparities within and between countries have an adverse impact on the health and well-being of children and adolescents.

The HBSC pilot study as a Linked project was conducted in 2014 in Aktobe oblast in Kazakhstan using the 2009-2010 HBSC protocol. We used the FASII scale since the data collected using the HBSC (2009-2010) questionnaire included items suitable for this measure [24].

MATERIAL AND METHODS

We used the data from the HBSC pilot study, which was a school based survey of children aged 11, 13, and 15 years old, conducted in Aktobe oblast in 2014. To calculate the required

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number of participants, the number of school students in the target age group was determined using data from the 2009 census (courtesy of the Statistics Agency of Kazakhstan). At the time of the study, there were 37985 children, comprising of 10242 boys and 9759 girls, in the target age group in Aktobe oblast. Given the 97% probability of faultless prognosis, a confidence interval of 5%, the minimum target sample size of 1175 students from public schools with 390 people in each age group was identified.

We used the cluster sampling method to divide the 67 public schools in Aktobe oblast into proportionally sized clusters from which 7 schools were randomly selected. In each school, students from grades 5, 7, and 9 participated in the survey. In total, 65 classes were selected and the response rate was 95%. The present study includes data on 1200 children aged 11, 13, and 15 years.

The survey was conducted by trained interviewers and they were supervised by people who were in-charge of the quality control of data collection. The data were processed using the Statistical Package for the Social Sciences (SPSS).

The socioeconomic status of the participants was measured using the FAS II. The scale includes the following variables of affluence in a family: (a) Does your family own a car, van, or truck? (b) Do you have a bedroom for yourself? (c) How many computers does your family own? (d) In the past 12 months, how many times did you travel during vacation with your family? [17] A composite FAS score was calculated for each adolescent based on his or her responses to the four items. A three-point ordinal scale was used to analyze the level of affluence: low, medium, and high affluence.

The correlation between family affluence and health and behavior variables was tested separately for boys and girls for the target age group. The following health and behavior variables were examined:

Health self-assessment was measured based on the participants' description of their health. The following question was asked: "Would you say your health is...?" The answer choices included "excellent," "good," "fair," and "poor." The data obtained from the study reflect that the respondents considered their health as ranging between "fair" and "poor."

Life satisfaction was assessed by using an adaptation of the Cantril's Ladder of Life Scale with scores ranging from 0 (the worst life possible) to 10 (the best possible life). Participants rated their current experiences in life and the results indicated a high level of life satisfaction as the ratings were higher than six.

With regard to health complaints, adolescents were required to answer the question: "How often in the last six months have you had the following ...?" The criteria included headache, stomach-ache, feeling low, irritability or bad temper, feeling nervous, difficulties in sleeping, and feeling dizzy. Possible answers to each complaint were the following: "about every day", "more than once a week", "about every week", "about every month" and "rarely or never." We calculated the proportion of respondents who reported multiple (two or more) health complaints that occurred more than once a week.

Adolescents were also asked the number of times in the past year that they suffered from an injury and had to be treated by a doctor or nurse. The answer choices varied from "I was not injured in the past 12 months", "one time", "two times", "three

times" to "four times or more." We analyzed the answers of respondents who had suffered at least one injury requiring medical attention in the past 12 months.

To evaluate the criterion of eating habits, respondents were asked how often they have breakfast during weekdays and weekends. We analyzed the responses of participants who reported that they eat breakfast on weekdays.

The consumption of fruits and soft drinks was measured by the following question, separate for fruit and drinks: "How many times a week do you usually eat fruits/drink soft drinks?" The answer choices varied from "never" to "more than once a day." Daily fruit and soft drinks consumption patterns were identified based on the responses indicating "once a day" and "more than once a day."

Frequency of moderate-to-vigorous physical activity (MVPA) among adolescents was assessed by the following question: "Over the past 7 days, on how many days were you physically active for at least 60 minutes per day?" In this study, we only used the data by adolescents engaged in MVPA on a daily basis.

Oral health was assessed through the frequency of brushing teeth. Participants were asked, "how often do you brush your teeth?" and the data were analyzed for respondents who brushed their teeth more than once a day.

Tobacco smoking was assessed by the following question that required yes/no answer: "Have you ever smoked tobacco (at least one cigarette, cigar, or pipe)?" We analyzed the data of respondents who had smoked tobacco at least once.

To determine the relationship between family affluence and indicators of health and behavior, data were analyzed to determine correlation and odds ratios (OR) between the indicators of health and two categories of affluence (high and low affluence).

A positive correlation is represented by "+" in the tables and bar graphs (above the X-axis) and shows that the health indicators are increasing with the increase in family affluence.

A negative correlation is represented by "-" in tables and shows that health indicators are decreasing as family affluence increases. The height of chart bars indicates the degree of difference between the adolescents belonging to high and low affluence families. The statistically significant difference is represented in the bar graphs.

The causal relationship between the family affluence and health indicators was identified by calculating the Pearson product-moment correlation coefficient (Pearson r) and the odds ratio, with 95% confidence intervals (CI s).

RESULTS

Analysis of the relationship between SES and some health and behavior indicators for boys in the target age group indicated a positive correlation between SES and life satisfaction (OR 0.47, CI 0.25-0.9, $p < 0.05$), injuries treated by medical staff (OR 2.14, CI 1.36-3.38, $p < 0.01$), and consumption of fruit on a daily basis (OR 1.69, CI 1.06-2.69, $p < 0.05$). Boys belonging to affluent families are more likely to have high life satisfaction, eat fruits every day, and have injuries. Table 1 and Graph 1 represent the difference in the prevalence (in percentage) of these three factors in boys from families with high and low affluence (20.8%, 33.9%, and 38.3% respectively).

For girls of the target age group, we found one statistically significant positive correlation between SES and the frequency of brushing teeth (OR 0.44, CI 0.27-0.73, $p < 0.01$). Girls with higher scores on FAS II were more likely to brush their teeth more than once a day. Table 1 and Graph 1 represent the difference in the prevalence of brushing teeth more than once a day between girls from low and high family affluence (30.4%).

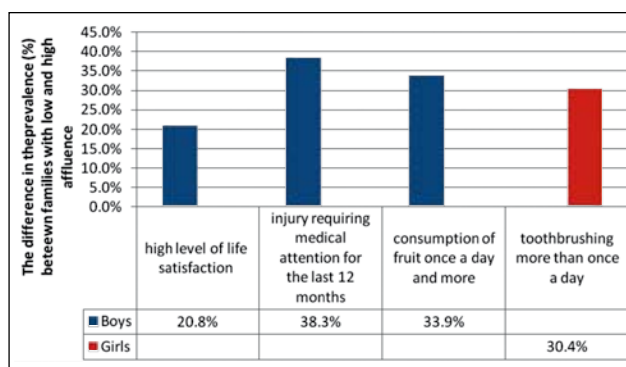
No significant associations were found for either gender between the FAS II scores and health self-assessment, health complaints, soft drinks consumption, frequency of moderate-to-vigorous physical activity, and tobacco smoking. For boys, no correlation was found between FAS II scores and oral health, and for girls, no correlation was found between FAS II scores and life satisfaction, daily fruit consumption, and treatment of injuries.

DISCUSSION

The direction of the correlation in our study between FAS score and high level of life satisfaction, injuries treated by medi-

Table 1 – Correlation between FAS II scores and the health/health behavior indicators among adolescent boys and girls

Health/behavior indicator	OR	95% CI	p-value	Pearson's R
«fair» or «poor» health self-assessment				
Boys	0.965	0.48-1.96	$p > 0,05$	-0.0053
Girls	0.775	0.43-1.41	$p > 0,05$	-0.0453
high level of life satisfaction				
Boys	0.472	0.24-0.90	$p < 0,05$	0.1239
Girls	0.465	0.21-1.02	$p > 0,05$	0.1062
multiple (two or more) health complaints				
Boys	1.316	0.65-2.64	$p > 0,05$	0.04493
Girls	1.435	0.83-2.48	$p > 0,05$	0.07474
injury requiring medical attention				
Boys	2.142	1.36-3.38	$p < 0,01$	0.17734
Girls	1.561	0.96-2.54	$p > 0,05$	0.09722
breakfast everyday				
Boys	1.359	0.87-2.12	$p > 0,05$	0.07306
Girls	1.385	0.85-2.25	$p > 0,05$	0.07206
daily consumption of fruit				
Boys	1.685	1.06-2.69	$p < 0,05$	0.11995
Girls	1.339	0.84-2.13	$p > 0,05$	0.06726
daily consumption of soft drinks				
Boys	0.641	0.34-1.22	$p > 0,05$	-0.0762
Girls	1.531	0.78-3.02	$p > 0,05$	0.06914
daily moderate-to-vigorous physical activity				
Boys	1.238	0.77-1.99	$p > 0,05$	0.04724
Girls	1.661	0.94-2.93	$p > 0,05$	0.09573
brushing teeth more than once a day				
Boys	0.862	0.56-1.33	$p > 0,05$	-0.0363
Girls	0.443	0.27-0.73	$p < 0,01$	-0.1766
ever smoked tobacco				
Boys	0.668	0.31-1.43	$p > 0,05$	-0.0564
Girls	1.908	0.50-7.24	$p > 0,05$	0.05236



Graph 1 – Positive correlation between family affluence and health and behavior indicators among adolescent boys and girls

cal staff, daily fruit consumption in boys, and the frequency of brushing teeth in girls is the same, i.e., positive, as for most other countries that participated in the HBSC 200/-2010 survey [25].

For most of the other indicators of health and behavior that were studied, the patterns of correlation with the FAS II scores were the same as in other regions from the HBSC 2009-2010 survey [25], although they were not statistically significant. The criterion of multiple health complaints was the only indicator that did not have commonality with other studies as it was positively correlated (not significant) with the FAS II scores.

The weak correlation between FAS scores and the indicators of health and behavior selected for this study might be related to factors such as a small sample size, miscellaneous factors contributing to family affluence, and the fact that this was a pilot study.

CONCLUSION

The result of the study indicates the weak relationship between FASII scores and certain health indicators among boys and girls in the pilot sample. Perhaps a more refined version of the FAS could be used in the future research in Kazakhstan. Further study is required to examine the relationship between family affluence and health indicators based on national data from HBSC survey scheduled in 2017-2018 in Kazakhstan.

Research transparency

Research did not have a sponsorship. The authors are absolutely responsible for presenting the release script for publication.

Declaration about financial and other relations

All authors took part in elaboration of article conception and writing the script. The release script was approved by all authors. The authors did not get the honorary for the article.

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ТҰЖЫРЫМ

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Салауатты өмір салтын қалыптастыру проблемалары ұлттық орталығы, Алматы қ., Қазақстан

ЖАСӨСПІРІМДЕРДІҢ ӘЛЕУМЕТТІК-ЭКОНОМИКАЛЫҚ СТАТУСЫ МЕН ӨМІР СҮРУ САЛТЫ АРАСЫНДАҒЫ БАЙЛАНЫС: ҚАЗАҚСТАНДАҒЫ ПИЛОТТЫ ЗЕРТТЕУ

Әлеуметтік-экономикалық жағдай мен жасөспірімдер арасында денсаулыққа байланысты мінез-құлық: Қазақстандағы пилотты зерттеу. Жасөспірімдердің әлеуметтік-экономикалық мәртебесі (СЭС) мен денсаулығы арасындағы өз ара байланыс қоғамдық денсаулық саласында кеңінен зерттеліп отыр. Отбасының ауқаттылығы шкаласы II (FAS II) қатысушылардың СЭС-ін анықтау үшін пайдаланылды, яғни отбасының СЭС-мен жасөспірімнің денсаулығының нақты бір көрсеткіштері арасындағы өз ара байланысты зерттеу көзделген.

Зерттеудің мақсаты. Бұл жұмыстың мақсаты отбасының әлеуметтік-экономикалық жағдайы мен денсаулыққа қатысты 11,13,15 жастағы жасөспірімдердің мінез-құлқы арасындағы кейбір аспектілердің өз ара байланысын зерттеу болып табылды.

Материал және әдістері. Ақтөбе облысында 11,13 және 15 жастағы балалар арасында жүргізілген мектеп жасындағы балалардың міне-құлқын зерттеуден алынған (HBSC) деректері пайдаланылды. Отбасы ауқаттылығының корреляциясы және денсаулығының көрсеткіштері былайша көрсетілді: денсаулықты өзіндік бағалау, өмірге қанағаттанушылық, денсаулыққа қатысты көптеген шағымдар, медициналық араласуды талап ететін жарақаттар, күнделікті таңғы ас, жемістерді тұтыну, алкогольсіз тәтті сусындарды тұтыну, тіз тазалау, темекі тарту, 11-15 жастағы балалар арасындағы физикалық белсенділік. Отбасының ауқаттылығы деңгейін анықтау үшін Family Affluence Scale (FAS) индикаторы пайдаланды, отбасының ауқаттылығы шкаласы. Бұл мәліметтерді талдау үшін корреляциялық анализ және мүмкіндіктердің қатынасы әдісі (OR) пайдаланылды.

Нәтижелері және талқылауы. FAS II (отбасының анағұрлым ауқатты болуы) шкаласы бойынша балы жоғарырақ ұлдардың өмірге деген қанағаттанушылығы жоғарылау болды (OR 0.47, ДИ 0.25-0.9, $p < 0.05$), медициналық араласуды керек ететін

жарақаттар жиірек анықталды (OR 2.14, ДИ 1.36-3.38, $p < 0.01$). Сондай-ақ отбасының ауқаттылығының артуына орай күнделікті негізде жеміс жейтін ұлдардың үлесі артуда. (OR 1.69, ДИ 1.06-2.69, $p < 0.05$). FAS II шкаласы бойынша (отбасының анағұрлым ауқатты болуы) балы анағұрлым жоғары қыздар тістерін күніне бір реттен көбірек рет тазалайтын (OR 0.44, ДИ 0.27-0.73, $p < 0.01$). Отбасының ауқаттылығы шкаласы мен денсаулық және мінез-құлықтың кейбір индикаторларының арасындағы бал бойынша айтарлықтай байланыс анықталмады.

Қорытынды. Пилотты іріктеудегі нәтижелер ұлдар мен қыздардың отбасының ауқаттылығы шкаласы мен денсаулық және мінез-құлық көрсеткіштері бойынша балдардың әлсіз корреляциясын көрсетті. Отбасының ауқаттылығы мен денсаулық және мінез-құлық көрсеткіштерінің ара байланысын ұлттық деректер негізінде одан әрі зерттеу керек.

Негізгі сөздер: денсаулықтағы теңсіздік, отбасының ауқаттылығы шкаласы, денсаулыққа қатысты күтім, жасөспірімдер, мектеп жасындағы балалардың міне-құлқын зерттеу (HBSC), әлеуметтік-экономикалық мәртебе.

РЕЗЮМЕ

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ВЗАИМОСВЯЗЬ МЕЖДУ СОЦИАЛЬНО-ЭКОНОМИЧЕСКИМ ПОЛОЖЕНИЕМ И ПОВЕДЕНИЕМ, СВЯЗАННЫМ СО ЗДОРОВЬЕМ, СРЕДИ ПОДРОСТКОВ: ПИЛОТНОЕ ИССЛЕДОВАНИЕ В КАЗАХСТАНЕ

Взаимосвязь между социально-экономическим статусом (СЭС) и здоровьем подростков широко изучается в общественном здравоохранении. В данной работе Шкала достатка семьи II (FAS II) использовалась для определения СЭС участников для исследования взаимосвязи между СЭС семьи и определенными показателями здоровья и поведения подростков.

Цель исследования. Целью данной работы являлось изучение взаимосвязи между социально-экономическим поло-

жением семьи и некоторыми аспектами поведения подростков 11,13,15 лет в отношении здоровья.

Материалы и методы. Были использованы данные из исследования поведения детей школьного возраста (HBSC), проведенного среди детей 11,13 и 15 лет в Актыбинской области. Проанализирована корреляция достатка семьи и следующими показателями здоровья: самооценка здоровья, удовлетворенность жизнью, множественные жалобы на здоровье, травмы, требующие медицинского вмешательства, ежедневный завтрак, потребление фруктов, потребление сладких безалкогольных напитков, чистка зубов, потребление табака, физическая активность среди 11-15-летних детей. Для определения уровня достатка семьи был использован индикатор Family Affluence Scale (FAS), Шкала достатка семьи. Корреляционный анализ и метод отношения шансов (OR) были использованы для анализа данных.

Результаты и обсуждение. Мальчики с более высокими баллами по шкале FAS II (более высокий достаток семьи) с большей вероятностью имели выше удовлетворенность жизнью (OR 0.47, ДИ 0.25-0.9, $p < 0.05$), чаще выявлено наличие травм, требующих медицинского внимания (OR 2.14, ДИ 1.36-3.38, $p < 0.01$). Также с увеличением достатка семьи увеличивается доля мальчиков, употребляющих фрукты на ежедневной основе (OR 1.69, ДИ 1.06-2.69, $p < 0.05$). Девочки с более высокими баллами по шкале FAS II (более высокий достаток семьи) с большей вероятностью чистили зубы чаще одного раза в день (OR 0.44, ДИ 0.27-0.73, $p < 0.01$). Не было выявлено значимой взаимосвязи между баллами по Шкале достатка семьи и некоторыми индикаторами здоровья и поведения.

Выводы. Результаты показали слабую корреляцию баллов по Шкале достатка семьи и показателями здоровья и поведения среди мальчиков и девочек в пилотной выборке. Необходимо дальнейшее изучение взаимосвязи достатка семьи и показателями здоровья и поведения на основе национальных данных.

Ключевые слова: неравенство в здоровье, шкала достатка семьи, поведение в отношении здоровья, подростки, исследование поведения детей школьного возраста (HBSC), социально-экономический статус.

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