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EXPOSURE TO ELECTRONIC MEDIA AND ITS INFLUENCE ON SLEEP AMONG JEWISH AND ARAB ADOLESCENTS

ABSTRACT. Ganim Abo Salah Ali Sondos, *Exposure to Electronic Media and Its Influence on Sleep among Jewish and Arab Adolescents* [Wpływ mediów elektronicznych na sen nastolatków żydowskich i arabskich]. *Studia Edukacyjne* nr 46, 2017, Poznań 2017, pp. 451-460. Adam Mickiewicz University Press. ISSN 1233-6688. DOI: 10.14746/se.2017.46.29

Sleep is important to physical and mental development. Studies show that adolescents suffer from electronic media exposure-related inadequate and non-quality sleep. In Israel, traditional, conservative Arab society is undergoing a modernization process with exposure to the Western lifestyle and Israeli Jewish culture. This comparative cross-sectional study compared electronic media exposure's impact on sleep in secular Jewish and Arab society in Israel, involving 229 middle and high school adolescents, 118 Arabs and 111 Jews. Research tools were the School Sleep Habits Survey (SSHS) and a sociodemographic questionnaire. Jewish adolescents are more exposed to electronic media than are Arab adolescents only during mid-week. Weak but significant correlations were found between late night use of electronic media and sleep duration; increased exposure to television ($r = -0.17$, $p = .01$), mobile telephone $r = -0.21$, $p = .002$, and tablet ($r = -0.14$, $p = .02$) related to shorter sleep duration and longer sleep latency mid-week in both groups and later weekend wake-up time. Arab adolescents are sleepier during the day and have more sleep-related behavior problems. As electronic media exposure rises, sleep duration shortens, and sleep time is postponed in both cultures. Exposure to electronic media is higher among Jewish adolescents. Boys sleep longer than girls during the week (a difference of nearly an hour).

Key words: adolescents, sleep patterns, electronic media, Arab sector in Israel

Relationship between Electronic Media and Sleep Patterns among Adolescents

Israel is one of the countries in which youths spend the most time watching television, more than four hours a day.¹ Today youths live in a world

¹ World Health Organization, *Inequalities in young people's health: Health behavior in school-aged children – international report from the 2005/2006 survey*, Health Policy for Children and Ad-

where there is the unending growth of media.² The technological advancement and the exposure to a tremendous number of media devices have caused changes in the social and cultural lifestyle, and there is steadily increasing evidence that indicates the influence of this development on health and functioning,³ through their harmful influence on the sleep quality, sleep duration, and sleep timing.⁴ The increased exposure to the electronic media is related to a later sleep time, short sleep, and higher level of tiredness, and use of mobile phones at night is related to tiredness and sleepiness during the day.⁵

Deficient sleep quality is associated with lacks in personality, social, and psychological functions.⁶ Inadequate sleep is related to sleepiness during the day and harm to the daily functioning,⁷ to harm to the creativity and memory ability,⁸ and to decline in the grades.⁹ Sleep quality was found positively related with four school roles: teacher acceptance and assessment, student self-image, student achievements, and student motivation.¹⁰

Adequate sleep is related to a positive health situation, while inadequate sleep increases the risk of mental problems and deficient emotional functioning, primarily depression and anxiety.¹¹ Short sleep increases the risk of depression syndromes and poor self-esteem,¹² and short sleep (less than seven hours) is related to a poor mental situation.¹³

olescents, 2008, 5, p. 44-56; E. Flint-Bretler, *The influence of parental intervention on the exposure to media and sleep patterns among adolescents*, Haifa 2013.

² J.D. Brown, E.M. Witherspoon, *The mass media and American adolescent's health*, Journal of Adolescent Health, 2002, 31, p. 153-170.

³ T. Shochat, O. Flint-Bretler, O. Tzischinsky, *Sleep patterns, electronic media exposure and daytime sleep-related behaviors among Israeli adolescents*, Pediatric, 2010, 99, p. 1396-1400.

⁴ T. Shochat, *Impact of lifestyle and technology developments on sleep*, Nature and Science of Sleep, 2012, 4.

⁵ T. Shochat, O. Flint-Bretler, O. Tzischinsky, *Sleep patterns, electronic media exposure*.

⁶ M.K. LeBourgeois et al., *The relationship between reported sleep quality and sleep hygiene in Italian and American adolescents*, Pediatrics, 2005, 155, p. 266-268.

⁷ X. Liu, *Sleep and adolescent suicidal behavior*, Sleep, 2004, 27, p. 361-374; T. Shochat, M. Cohen-Zion, O. Tzischinsky, *Functional consequences of inadequate sleep in adolescents: A systematic review*, Sleep Medicine Reviews, 2014, p. 1-13.

⁸ J. McCoy, R. Strecker, *The cognitive cost of sleep lost*, Neurobiology of Learning and Memory, 2011, 96(4), p. 564-582.

⁹ A.R. Wolfson, M.A. Carskadon, *Understanding adolescent's sleep patterns and school performance: A critical appraisal*, Sleep Medicine Reviews, 2003, 7(6), p. 491-506.

¹⁰ A.M. Meijer et al., *Time in bed, quality of sleep and school functioning of children*, Journal of Sleep Research, 2000, 9(2), p. 145-153.

¹¹ C.A. Alfano, *Sleep problems and their relation to cognitive factors, anxiety, and depressive symptoms in children and adolescents*, Depression and Anxiety, 2009, 26(6), p. 503-512.

¹² K. Fredriksen, *Sleepless in Chicago: Tracking the effects of adolescent sleep loss during the middle school years*, Child Development, 2004, 75(1), p. 84-95.

¹³ Y. Kaneita, K. Suzuki et al., *Association between mental health status and sleep status among adolescents in Japan: a nationwide cross-sectional survey*, The Journal of Clinical Psychiatry, 2007, 68(9), p. 1426-1435.

Sleep problems among healthy adolescents are related to problems of attention deficit hyperactivity disorder, anxiety, and depression.¹⁴ In addition, a long period of time to fall asleep, difficulty waking up in the morning, and long duration of wakefulness during the night are some of the behaviors that accompany deficient sleep patterns.¹⁵ Behaviors that accompany deficient sleep patterns address falling asleep during the school lessons, tardiness to school because of sleeping late, need for multiple wake up calls, and sleeping until the afternoon.¹⁶

Arab Society in Israel

Arab society in Israel, in contrast to Jewish society, which is completely Western, is a fundamentally traditional society and includes characteristics of collectivist and authoritarian culture.¹⁷ This society is found in a gradual transition from a collectivist society to a more individualist society, when its main characteristic is the abandonment of traditionalism in favor of a more modern and open life.¹⁸

Arab society in Israel is found in a period of transition and is influenced by what happens around it. It is exposed to Western values and norms following its encounter with Jewish society, satellite television, internet, and many other factors.¹⁹

¹⁴ J. Coulombe et al., *Sleep problems, tiredness, and psychological symptoms among healthy adolescents*, *Journal of Pediatric Psychology*, 2011, 36, p. 25-35.

¹⁵ F. Giannotti et al., *Circadian preference, sleep and daytime behavior in adolescence*, *Journal of Sleep Research*, 2002, 11(3), p. 191-199.

¹⁶ T. Shochat, *Sleep patterns and daytime sleep-related behavior in male and female Arab and Jewish adolescents in Israel: Sleep and biological rhythms*, *Japanese Society of Sleep Research*, 2013, 1-8, p. 121-135.

¹⁷ V. Suleiman-Dehalala, *Differences in the perception of parenting between Arab adolescents in Israel and their siblings of the same sex and between boys and girls*, Haifa 2013; A. Shehala, *Conditioned relation of parent and psychological, social, and scholastic adjustment as dependent on the structure of personal values among Arab youths*, Haifa 2012.

¹⁸ M. Al-Haj, *Kinship and modernization in development societies: The emergence of instrumentalized kinship*, *Journal of Comparative Family Studies*, 1995, 26, p. 311-328; Y. Lavee, R. Katz, *Division of labor, perceived fairness, and marital quality: The effect of gender ideology*, *Journal of Marriage and Family*, 2002, 64(1), p. 27-39; T. Shapira, *Self-efficacy, perception of culture, and empowerment of women: meanings of gender*, *Studies of Administration and Organization of Education*, 2011, 32, p. 185-215.

¹⁹ N. Anabusi, *Relations between communication style and parenting style and communication and style of conflict resolution in the family among Arab adolescents*, Haifa 2007; P. Perach, *Parent-child relation and emotional social functioning of Arab adolescents*, Haifa 2002; R. Sharabany, Y. Eshel, C. Hakim, *Boyfriend, girlfriend in traditional society: Parenting styles and development of intimate friendships among Arabs in school*, *International Journal of Behavioral Development*, 2006, 32(1), p. 66-75.

Modernization and the many changes to which Arab society is exposed have greatly influenced adolescents and their lifestyle. Today Arab adolescents are more exposed to electronic media and influenced by European society.²⁰

The present research study is intended to provide an answer to another aspect from the constellation of questions arising regarding the influence of modernization on the functioning and health of adolescents in Arab society. Specifically, the research study will examine the relationship between patterns of exposure to electronic media and sleep practices and accompanying behaviors among Arab adolescents.

Research Method

Research Design

The research study is a comparative cross-sectional study that examines the sleep patterns and exposure to electronic media among Arab and Jewish male and female adolescents in the state schools in the middle school and high school in the North of Israel.

Research Instrument

The School Sleep Habits Survey (SSHS) with a reliability of Cronbach's Alpha $\alpha = 0.70$ in the Jewish sample and $\alpha = 0.75$ in the Arab sample. In addition, there was a questionnaire that followed up on the exposure to electronic media and its reliability was $\alpha = 0.65$, as well as a demographic information questionnaire.

Statistical Analyses

To examine the group differences in the demographic variables, use was made of the chi-square (χ^2) test for categorical variables of sex, grade, and religiosity and the t-test for independent samples for variables of age, height, and weight. To examine the relationship between the exposure to electronic media and sleep patterns, use was made of the Pearson test, and for the comparison of sleep indices and media over groups (Jews/Arabs), gender, and group*gender interaction multivariate analysis of variance (MANOVA) was performed.

²⁰ N. Anabusi, *Relations between communication style*.

Research Findings

A total of 229 adolescents, 118 from the Arab sector and 111 from the Jewish sector, participated in the research study. The adolescents are from eighth grade to eleventh grade. The mean age in the entire sample is 14.9 ± 1.2 years. In the Arab sector the mean age is 15.11 ± 1.70 , and in the Jewish sector the mean age is 14.70 ± 1.20 . The gender division in the entire sample was 97 boys and 128 girls. Differences were not found between the groups in the variables of age, height, and weight.

Regarding the presence of media devices among adolescents, it was found that all the subjects, in both the Arab sector and the Jewish sector, have a television and a computer at home. However, the percentage of Arab students with a television in their room (96.9%) is similar ($\chi^2 = 1.06$, $p = .300$) to the percentage of Jewish students (99.0%). The percentage of Arab students who have a computer in their room (78.0%) is lower ($\chi^2 = 7.80$, $p = .020$) than the percentage of Jewish students (92.6%). Moreover, 89.5% of the students in the Arab sector have a mobile phone, a high rate, but still significantly lower ($\chi^2 = 9.50$, $p = .002$) than the percentage in the Jewish sector (99.1%). The percentage adolescent students who have a tablet is similar ($\chi^2 = .310$, $p = .480$) in both sectors (Arab – 64.7%, Jewish – 65.8%).

Significant differences were found between Arab adolescents and Jewish adolescents in the use of television after lights are turned off: Jewish adolescents watch television for a longer period of time ($M = 0.52 \pm 0.72$) than do Arab adolescents ($M = 0.28 \pm 0.70$). Differences were not found in the level of use of another media. Significant differences were found between boys and girls in the use of the computer after lights were turned off, so that boys use the computer ($M = 0.38 \pm 1.11$) for longer than do girls ($M = 0.01 \pm 0.41$).

To examine the relationship between exposure patterns to electronic media and sleep patterns, the Pearson test was performed, which examined the relationship between degree of exposure to electronic media in the middle of the week and on the weekend and the adolescents' sleep duration and sleep time. Weak but significant correlations were found between use of electronic media at night after lights out and sleep duration of adolescents in the middle of the week: an increase in the exposure to television ($r = -0.17$, $p = .01$), to the mobile phone ($r = -0.21$, $p = .002$), and to the tablet ($r = 0.14$, $p = .02$) is related to shorter sleep duration in both groups. In addition, a significant relationship was found between sleep latency and wake-up time in the middle of the week and degree of exposure to media, so that a long sleep latency was related to an increase in the use of the mobile phone at night after lights out ($r = -0.26$, $p = .01$), and a late wake-up time was related to increased use of the mobile phone after lights out ($r = -0.14$, $p = .04$) in both groups.

Pearson Correlations between Sleep Latency, Sleep Duration, and Wake-Up Time of Adolescents in the Middle of the Week and Exposure to Media (N = 229)

	Sleep Latency	Sleep Duration - Middle of the Week	Wake Up Time
	R	R	R
Media before the Studies - Mobile Phone - Computer	0.07 -0.03	0.02 0.09	-0.09 -0.03
Media in the Evening - Mobile Phone - Computer	0.04 0.01	0.002 0.001	-0.07 0.00
Media at Night - Mobile Phone - Tablet - Television - Computer	0.26** -0.06 0.12 0.08	**0.21- *0.14- *0.17- 0.06-	-0.14* 0.08 -0.02 0.01

* $p < .05$; ** $p < .01$

In addition, a significant relationship was found between the sleep time and the use of mobile phone during the day, so that lateness in the sleep time is related to increased use of the mobile phone during the day ($r = -0.13$, $p = .05$). Furthermore, a relation was found between wake up time on the weekend and use of the tablet during the day and at night after lights out, so that a late wake up time was related to the increased use of the tablet during the day ($r = -0.15$, $p = .02$) and at night after lights out ($r = -0.14$, $p = .03$).

Significant differences were found between Arab adolescents and Jewish adolescents in the degree of sleepiness, Arab adolescents are sleepier ($M = 14.59 \pm 3.60$) than Jewish adolescents ($M = 12.67 \pm 3.12$). In the behavior indices that harm sleep, Arab adolescents have more behavioral problems related to sleep ($M = 23.79 \pm 6.25$) than Jewish adolescents ($M = 20.91 \pm 5.67$). Regarding type, it was found that Arab adolescents are more morning types ($M = 26.46 \pm 4.08$) than Jewish adolescents ($M = 27.94 \pm 5.30$). A significant primary effect was found for gender in mood: girls have a depressed mood ($M = 10.34 \pm 2.46$) more than do boys ($M = 9.10 \pm 2.55$). An effect of interaction between group (Arabs/Jewish) and gender (boys/girls) was not found.

Discussion

The present research study examined the use of electronic media and compared for the first time between the Arab sector and the Jewish sector in Israel&examined four types of electronic media used by adolescents – television, computer, mobile telephone, and tablet. The findings indicated a considerable rise in the existence of media devices among adolescents in comparison to the previous study according to which only about two-thirds of the youths had a television device in their room and about one-third had a computer in their room.²¹ In addition, there was a considerable increase in the presence of a mobile phone among adolescents (89% in the Arab sector and 99% in the Jewish sector).

The adolescents' reports found that in the middle of the week the increased use of the mobile phone and the tablet at night in the late hours was related to a short sleep duration and the use of the mobile phone at the late hours of night was related to a long sleep latency and a late wake-up time. It is possible that the existence of mobile and more available media devices among the adolescents, such as a mobile phone and tablet, which they can use in their own rooms and at late hours of the night, reduces the use of the computer and the television. In addition, it is possible to explain this difference in the development of the technology. In the year 2010 the use of television programs and Internet on handheld devices (such as the mobile phone and the tablet) was not yet prevalent, while today these are applications available today on every smartphone and tablet, which constitute computers and screens for all purposes.²²

The research findings support most of the previous research studies, which found that the increased use and increased exposure to electronic media are related to a later sleep time and to a shorter sleep duration. In addition, today the use of the mobile media (telephone, tablet) takes the place of the stationary devices (television, computer) in the context of the sleep patterns.

Today youths live in a world where there is unending growth of the media.²³ Youths and children use the computer and computer games during the day, and there is an increase in the use of electronic devices among youths.²⁴ We found in our research study that Jewish adolescents use the computer for a longer period of time after the studies and watch more television after lights out in the middle of the week than do Arab adolescents. This finding indicates that

²¹ G.J. Calamaro, T. Mason, S.J. Ratcliffe, *Adolescents living the 24/7 lifestyle: effects of caffeine and technology on sleep duration and daytime functioning*, *Pediatrics*, 2009, 123(6), p. 1005-1010.

²² T. Almog, E. Almog, *Connected 24/7 – Digital children*. In: *Generation Y Research (Chapter 7)*, 2014, retrieved from the website: <http://www.peopleil.org/details.aspx?itemID=30424&searchMode=0&index=3>

²³ J.D. Brown, E.M. Witherspoon, *The mass media and American adolescent's health*, *Journal of Adolescent Health*, 2002, 31, p. 153-170.

²⁴ A. Smith et al., *A picture of health: Highlights from the 2008 BC Adolescent Health Survey*, Vancouver, BC: 2009.

the exposure to electronic media is higher among Jewish adolescents. A survey of the World Health Organization on health behaviors in the school found that Israel is one of the countries in which the youths spend the most time watching television (World Health Organization – WHO, 2008). It was further found that boys use the computer after the studies for a significantly longer period of time than do the girls. It is possible that the reason is that girls help with housework after the studies more than do boys and therefore they have less time at their disposal for using the computer than do boys. It is suggested to examine in-depth additional possible reasons for the differences between boys and girls in the use of the electronic media on the weekdays, so as to understand whether these are related also to differences of sector, religion, and culture.

The present research study found that Arab adolescents have more sleep-related behavior problems than do Jewish adolescents, like in the research of Shochat.²⁵ This finding is commensurate with the findings of a previous survey, according to which sleep problems were related with different problems (attention and concentration, anxiety, and depression).²⁶ In the present research study, high levels of behavior problems related to sleep among Arab adolescents were found to be commensurate with the findings of sleep latency and sleepiness, according to which Arab adolescents take more time to fall asleep (long sleep latency) than do Jewish adolescents and their daily level of sleepiness is higher. It appears that the different lifestyle in every culture has a possible influence on the accompanying behaviors that are related to sleep, and it is possible that the lifestyle in the Arab sector invites more daily sleep-related behavior problems. However, it is necessary to examine in a continuation research this possible explanation.

The present research study found that Jewish and Arab female adolescents reported a more depressed mood than did male adolescents in both sectors. This finding is commensurate with previous research, which found a difference in mood between boys and girls in both sectors,²⁷ although Arab society is more traditional and religious and has greater belief in God. A research study that examined the relationship between spirituality and symptoms of depression among young people found that spirituality, which characterizes religious belief, may contribute to the preservation of lower levels of symptoms of depression among adolescent girls.²⁸ In contrast, since Arab society in Israel is undergoing rapid social changes and is more influenced by the societies of the West

²⁵ T. Shochat, *Sleep patterns and daytime sleep-related behavior*, p. 121-135.

²⁶ J. Coulombe et al., *Sleep problems, tiredness, and psychological symptoms among healthy adolescents*, *Journal of Pediatric Psychology*, 2011, 36, p. 25-35.

²⁷ T. Shochat, *Sleep patterns and daytime sleep-related behavior*, p. 121-135.

²⁸ J.E. Perez, T. Little, C. Heinrich, *Spirituality and depressive symptom in a school-based sample of adolescents: A longitudinal examination of mediated and moderated effects*, *Journal of Adolescent Health*, 2008, 44, p. 380-386.

and by modernization, spirituality has a low impact on the lives of adolescent boys and girls, who are more exposed to these social changes. Modernization and the exposure to the West influenced more the lifestyle of Arab society in comparison to Jewish society.²⁹ Therefore, the present research study did not find differences in the mood between Arab and Jewish adolescent girls.

Conclusions

It can be concluded from the findings of the present research study that there is room to plan and perform an intervention program for Arab adolescents and their parents, when this program will explain the importance of sleep to the health and the degree of influence of the electronic media on the adolescents' sleep patterns. It is necessary to begin with the implementation of this program already in early adolescence, when the sleep duration is still close to the recommended sleep duration and the parents' influence on their children at this age is greater.

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²⁹ N. Anabusi, *Relations between communication style; P. Perach, Parent-child relation; R. Shabany, Y. Eshel, C. Hakim, Boyfriend, girlfriend in traditional society*, p. 66-75.

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