RELATIONSHIP BETWEEN LIFESTYLE AND ORAL HEALTH

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Abstract: *Many cultural practices, conventions, and tenets make up people's lifestyles. Healthful behaviors are necessary for good health. Poor nutrition, inactivity, smoking, obesity, and diabetes are major causes of tooth decay and gum disease. This study compared the dental health of affluent and underprivileged people by examining their lifestyles. A cross-sectional study was conducted between November 2020 and January 2021 to compare the dental health and lifestyle behaviors of people from different socio-economic classes. Low-SEC students were selected from a public university in Lyari, while high-SEC students were selected from a private medical school. The study used a standardized questionnaire to assess socio-economic status and lifestyle behaviors such as sleep and leisure and conducted thorough extra- and intra-oral examinations to report dental caries prevalence. The data was analyzed using SPSS 23. The most significant factor in the high prevalence of dental caries (p<0.05) in the low socio-economic group was the time spent watching television. There was also no correlation between the other factors, such as interest in reading or computer use. This study suggested examining lifestyle and socio-economic status's effects on oral health. Health awareness, dental treatment availability, and socio-economic level affect oral health practices and lifestyle. TV harms teeth. Thus, oral health and disease prevention require healthy and active lifestyles in young children and adults. This study linked dental health to socio-economic status. Income and education are risk factors for poor oral health.*

Keywords: Lifestyle, Oral Health, Sleep Pattern, Socio-Economic Status, TV Watching

Introduction

People's overall health, including their oral health, is affected by their social status and way of life (Baskaradoss et al., 2019). The phrase "lifestyle" is broad, covering actions and mentalities (Pishchik, 2020). According to Raphael, most Canadians accept that individual factors, including heredity, access to medical care, and lifestyle choices, are decisive in determining one's health and illness (Raphael, 2017).

People who followed healthful lifestyle habits such as maintaining a healthy weight, getting the required amount of exercise, and eating a nutritious diet were 40% less likely to develop periodontitis than those who did not (Al-Zahrani, 2006). There has long been an association between regular exercise and dietary patterns that point to a healthy lifestyle (Kvaavik et al., 2010). In one study, Palestinian teens' poor eating, lack of activity, and demography were examined. Boys had a healthier diet because they were more active than girls (Al Sabbah et al., 2007).

It has come to our attention that the incidence of oral illnesses is rising. This is attributed to a lack of access to dental treatment and social hardship, which contribute to the increased exposure of smaller demographic groups to risk factors, increasing their susceptibility to the disease (Gushi et al., 2005).

Differences in lifestyle and socio-economic position have been shown to affect an individual's dental health (Watt, 2012). The respondents' lifestyles and socio-economic backgrounds interact in a way that has a multiplicative impact on their oral health (Timiş and Dănilă, 2005). As a direct consequence of this, the nature of the relationship that exists between social status, lifestyle choices, and oral health is of significant theoretical and practical importance (Newton and Bower, 2005). The study's primary objective was to evaluate the myriad aspects of lifestyle that have the potential to have a substantial bearing on oral health. This will assist in providing a more exact definition of dental disorders and determine whether they differ between people of different social classes.

Methodology

A cross-sectional study was conducted on two groups of persons, one from a poor socio-economic background and the other from a high socio-economic background, between November 2020 and January 2021. The following medical

conditions did not qualify for participation in the study: premenstrual syndrome, diabetes mellitus, hypertension, valvular heart disease, bleeding disorders, chronic hepatitis, acid peptic illness, asthma, TB, thyroid disease, and skin illnesses.

Trained interviewers asked all the participant's lifestyle and socio-economic questions. This study considered rest, sleep outside of college hours, and recreational activities like watching TV, using computers, reading books, exercising, and playing outdoor sports as potential confounding factors. The participants were asked to fill out a food frequency questionnaire to learn about their daily diets, including whether they ate fruits and vegetables, how much-refined sugar and soft drinks they drank, etc. They were asked about their daily meal and snack intake. Their lifestyle included how often they ate out. Oral addictive behaviors like chalia, smoking, pan, tobacco, and naswar were also asked about.

The participants' socio-economic level was based on their parents' income and their children's school enrollment. This allowed us to classify them as poor or wealthy (socio-economic class). A public university in Lyari, Karachi, selected low-SEC students, whereas a private medical school selected high-SEC students.

The participants were asked to remove their shoes and measure their weight and height while wearing light indoor attire. Body mass index (BMI) was determined by dividing weight (kg) by height (m^2). The smallest part of the individual's midsection was measured for waist size, the area between the lowest rib cage border and the iliac crest.

Both the time of day that participants brushed their teeth and the use of additional oral hygiene products were factors that were analyzed in the current research. There are times during the day, including before or after breakfast, lunch, dinner, and before bed. The total number of times that someone brushes their teeth in a single day served as the basis for determining the frequency of daily tooth brushing. Items such as dental floss, mouthwash, interdental brushes, electric toothbrushes, and miswak were classified as secondary oral items.

The patient's dental treatment history comprised procedures such as scaling, filling, extraction, root canal therapy, and any prosthesis. The amount of dental caries was determined by performing an intra-oral examination of all four quadrants using a mirror and an explorer with two ends. It was determined how many teeth were affected by caries overall. Periodontal evaluation was documented and evaluated as healthy if there was no evidence of plaque and the tooth's surface seemed clean. Periodontal evaluation was recorded and rated as unhealthy if there was a history of bleeding gums, gingivitis, calculus formation, or periodontitis.

SPSS statistics (version 23.0) was used for the statistical study. The features of each individual were analyzed using descriptive statistics. Data were presented as the mean, standard error of the mean, or as a percentage where necessary. Dental caries were observed in low and high SEC, and the odds ratio was calculated. The Bahria University Medical & Dental College Karachi's ethical review committee approved the research.

Results

The study included one hundred participants, all between the ages of 18 and 25 (the average age was 20.91 years). The comparison of the personal data of all respondents is displayed in Table 1, with Group A representing high SEC and Group B representing low SEC. The highest frequency was associated with high SEC in evaluating brushing frequency across all participants. The low SEC brushed once a day at most to its maximum. (Figure 1).

The general population's lifestyle tendencies are shown in Figure 2. Participants from both socio-economic groups were surveyed about their sleeping and resting habits, leisure activities such as watching TV, reading books, and using computers, and physical activity and sports participation. Eighty percent of the participants had gotten at least six hours of sleep the night before the study. This was most pronounced in group A. participants were more likely to engage in sedentary behaviors such as watching television or reading books (85%), especially in group A. However, the proportion of participants who participated in physically active pursuits was low (37%). The higher SEC group A. (64%) was also more likely to engage in sports and other physical activity. Subjects in group B saw a substantial improvement in their dental caries status after increasing their TV time compared to those in group A (p = 0.03). Sleep duration, internet use, book reading, exercise, and outdoor sports were all examined but were shown to not correlate with tooth cavities or periodontal health. (Tables 2 & 3)
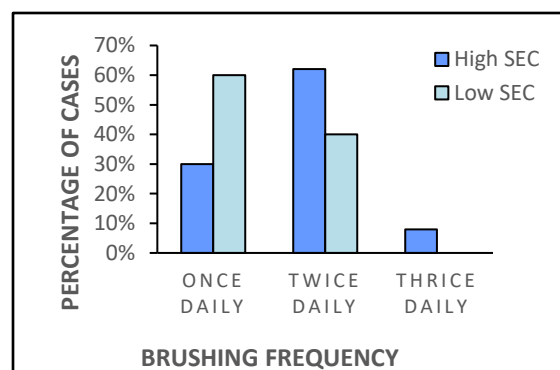

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Figure 1 **Comparison of brushing frequency of high and low SEC. Values are given in percentage (%)**

Table 1 Descriptive Measures of Study Population

	All (n = 100)	Group A – High SEC (n = 50)	Group B – Low SEC (n = 50)
Age (y)	20.91±1.56 *Range: 18 - 25*	22.04±1.59 *Range: 19 – 25*	19.78±1.53 *Range: 18 - 25*
Gender			
Male (%)	46 (n = 46)	50 (n = 25)	42 (n = 21)
Female (%)	54 (n = 54)	50 (n = 25)	58 (n = 29)
Abbreviations: SEC, Socio-economic Class, Values expressed as mean±SD, range and percentage			

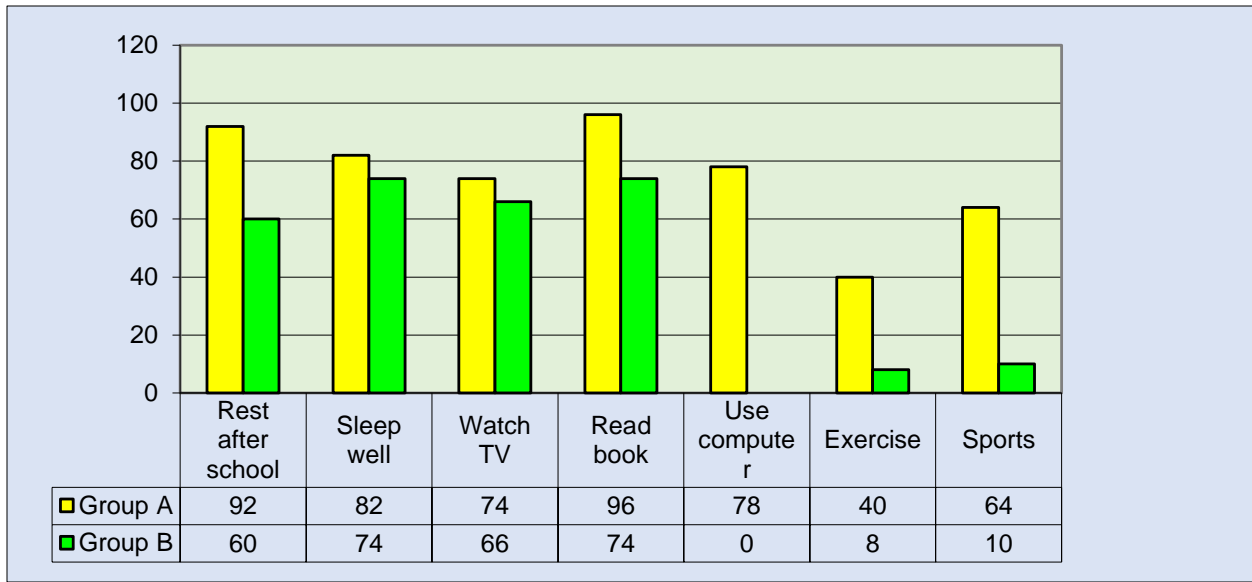|	Rest after school	Sleep well	Watch TV	Read book	Use computer	Exercise	Sports
Group A	92	82	74	96	78	40	64
Group B	60	74	66	74	0	8	10

Figure 2: **Lifestyle behavior of High and Low Socio-economic class.**
Group A = High socio-economic class; Group B = Low socio-economic class, Values expressed as percentage (%)

Table 2   Association of life style with dental caries in high socio-economic status

Life Style	Category	Caries +ve (n = 18)	Caries –ve (n = 32)	OR	95% CI	*p*-value
Rest	*Yes*	17 (37 %)	29 (63 %)	1.76	0.17 – 18.28	0.63
	No	01 (25 %)	03 (75 %)			
Sleep	*Yes*	14 (34 %)	27 (66 %)	0.65	0.15 – 2.80	0.56
	No	04 (44 %)	05 (56 %)			
Watching TV	*Yes*	10 (27 %)	27 (73 %)	0.23	0.06 – 0.87	0.03
	No	08 (62 %)	05 (38 %)			
Reading Books	*Yes*	17 (35 %)	31 (65 %)	0.55	0.03 – 9.33	0.67
	No	01 (50 %)	01 (50 %)			
Working on Computer	*Yes*	13 (33 %)	26 (67 %)	0.60	0.15 – 2.30	0.45
	No	05 (45 %)	06 (55 %)			
Exercise	*Yes*	07 (35 %)	13 (65 %)	0.93	0.28 – 3.03	0.94
	No	11 (37 %)	19 (63 %)			
Sports	*Yes*	09 (28 %)	23 (72 %)	0.39	0.12 – 1.30	0.12
	No	09 (50 %)	09 (50 %)			

Abbreviations: OR, Odds Ratio; CI, Confidence Interval, Values expressed as Percentage, OD, CI.

Table 3 *Association of lifestyle with dental caries in Low Socio-economic Status*

Life Style	Category	Caries +ve (n = 34)	Caries –ve (n = 16)	OR	95% CI	*p*-value
Rest	*Yes*	22 (73 %)	08 (27 %)	1.83	0.55 – 6.10	0.32
	No	12 (60 %)	08 (40 %)			
Sleep	*Yes*	24 (65 %)	13 (35 %)	0.55	0.13 – 2.40	0.42
	No	10 (77 %)	03 (23 %)			
Watching TV	*Yes*	24 (73 %)	09 (27 %)	1.87	0.54 – 6.40	0.32
	No	10 (59 %)	07 (41 %)			
Reading Books	*Yes*	22 (59 %)	15 (41 %)	0.12	0.01 – 1.04	0.03
	No	12 (92 %)	01 (8 %)			
Working on Computer	*Yes*	00 (0 %)	00 (0 %)	NA		
	No	34 (68 %)	16 (32 %)			
Exercise	*Yes*	03 (75 %)	01 (25 %)	1.45	0.14 – 15.20	0.75
	No	31 (67 %)	15 (33 %)			
Sports	*Yes*	04 (80 %)	01 (20 %)	2.00	0.21 – 19.50	0.54
	No	30 (67 %)	15 (33 %)			

Abbreviations: OR, Odds Ratio; CI, Confidence Interval, Values expressed as Percentage, OD, CI.

Discussion

The dental state of a community, as well as its treatment requirements, are directly related to that community's socio-economic characteristics, health behaviors, and environmental factors (Petersen and Kwan, 2011). Social disparity greatly impacts the caries indices, as evidenced by the substantial gap in the proportion of study participants who exhibited carious teeth. Consequently, it is significant to investigate whether or not there is a social gradient in the prevalence rate of dental caries (Perera and Ekanayake, 2008). A French study found that low-income people needed dental care more often. Education, income, and national origin influenced dental treatment more than insurance coverage (Trohel et al., 2016).

(Moussa et al., 2020) examined Egypt's population's tooth loss, dental health, socio-economic status, and behavioral risk factors. Not brushing was the most important behavioral risk factor for poor oral health and tooth loss in this population. Tooth loss was affected by socio-economic and demographic factors. Smoking did not negatively impact tooth health (Moussa et al., 2020). Disease prevention and health promotion programs must be improved in most nations to improve oral health, particularly periodontal status. Oral healthcare demand exceeds human, financial, and material resources in many countries (Kandelman et al., 2012). In an Iranian study, middle-aged and elderly Iranian adults had low oral hygiene rates. All cohort centers showed a pro-rich oral hygiene gap in middle-aged and elderly persons. The study revealed that poor and less-educated middle-aged and elderly persons needed focused policy initiatives to enhance preventative oral hygiene behaviors (Soofi et al., 2020).

Based on our findings, the research conducted by the Surgeon General and other studies points to a similar conclusion that there is a substantial connection between SEC and oral health, with people from low-income categories having the highest risk of dental caries (General et al., 2000; Reisine and Psoter, 2001). In one study, Children from lower socio-economic backgrounds were found to have a higher chance of getting dental caries and obtaining no dental treatment at all. Therefore, the study suggested that expanding and improving public health insurance will improve children's dental health care. In addition to providing preventative dental treatment and ensuring continuous care by referring patients to dentists, pediatricians play a crucial role in establishing a medical home for the child (Vasireddy et al., 2021). Tanaka has presented research that disproved the hypothesis that SEC increases the likelihood of tooth cavities in preschoolers (Tanaka et al., 2013). Other confounding variables may be at play in developing dental caries due to its complicated etiology.

This research suggests that one's dental and overall health are affected by various lifestyle factors, including the time spent in front of the television, reading, using the computer, exercising, going outside, and sleeping. This is especially important to remember as the body of literature connecting oral disease and systemic disease continues to expand, as a thorough evaluation of these lifestyle factors will ultimately explain the connection between the two (Jürgensen and Petersen, 2013).

Our findings align with those of Moreno, who found that better oral health results from a combination of a positive mental attitude and an awareness of the importance of regular physical activity and fitness (Moreno et al., 2008). Mental stress can be mitigated through regular recreational and leisure activities participation. Teenagers' dental health might be negatively impacted by the prevalence of sedentary and inactive activities, including watching television, using computers, and reading books. Watching TV or working on a computer for long periods can lead to habitual snacking, which is bad for the teeth and can cause cavities (Zeng et al., 2014).

Our results showing superior dental health in group A with a higher SEC and an inactive lifestyle are at odds with those of earlier studies. Because of this, we may conclude that their lower caries rates are not the result of their sedentary lifestyle but rather the result of their commitment to good oral health practices such as regular tooth brushing and dental checkups.

Numerous studies have examined the connection between how much sleep someone gets each night and their oral and general health. According to the findings of a study, there is a significant correlation between the amount of sleep and rest an individual receives and the progression of periodontal disease. Sleep, body mass index, and oral disorders have all been linked in other studies (Wu et al., 2023). In contrast to the literature that shows a clear link between inadequate sleep patterns and the acquisition of careless dietary habits, a less-than-satisfactory frequency of meal taking, and a compromised oral health status, our findings on sleep and rest patterns do not correlate with the improved oral health of low SEC subjects. This was corroborated by a study of young Japanese college students, which found no correlation between periodontal diseases and sleep quality or length (Islam et al., 2020).

Conclusion

This research was conducted to evaluate and analyze the impact that lifestyle choices and socio-economic standing have on the dental health of people of both sexes. A person's socio-economic status greatly impacts their lifestyle choices, with education about oral health and access to dental treatment being two of the most important components. It has been demonstrated that the amount of time spent watching television significantly impacts oral health in individuals with low SEC, resulting in a higher prevalence of tooth caries. Consequently, fostering in young children and young people a healthier and more physically active lifestyle is a fundamental driver of oral health status, with the aim of preventing oral diseases to a significant degree.

Authors' Contribution:

SH, MRH, RAS, RG, MNR, FB: Conceived, designed, and did statistical analysis editing of the manuscript.
SH, MRH, RAS, RG, MNR, FB: Did data collection and manuscript writing, review, and final approval of the manuscript.

Declarations

Hashmat et al., (2023)

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate
Approved by the department Concerned.
Consent for publication
Approved
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Conflict of interest

The authors declared absence of conflict of interest.

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