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Epidemiology

ASSOCIATION OF TRAIT MINDFULNESS, STRESS AND FOOD HABITS WITH UNSTIMULATED SALIVARY FLOW RATE AMONG SCHOOL-GOING ADOLESCENTS IN FARIDABAD DISTRICT: A CROSS-SECTIONAL SURVEY

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ABSTRACT **AIM:** To assess the association of Trait Mindfulness, Stress and Food Habits with Unstimulated Salivary Flow Rate and oral health status among school-going adolescents in Faridabad district.

Methodology: A cross-sectional epidemiological study was carried out among 400 school-going adolescents aged 14-18 years old attending Faridabad district schools. Ethical clearance was sought from the institutional ethical committee. The socio-demographic variables were recorded along with self-administered Mindful Attention Awareness Scale, Perceived Stress Scale, Adolescent Food Habit Checklist. A single trained calibrated examiner performed a Type III clinical examination. DMFT, Plaque Index (PI), Gingival Index (GI) and Unstimulated Salivary Flow Rate (USFR) was recorded. Statistical Analysis was performed using SPSS 21. The level of significance was set at $p<0.005$.

Results: The descriptives of MASS, PSS and AHFC were calculated as: 39.79 ± 6.66, 22.93 ± 4.06, 4.93 ± 2.17 respectively. The internal consistency as assessed by cronbach's alpha of all the three scales were found to be satisfactory. The prevalence of Decayed teeth among children was 16.5%, with mean DMFT: 0.53 ± 1.21.The MAAS score showed a significant positive correlation with PSS score and a negative correlation with AHFC score. Also, AHFC score was found to have a significant negative association with GI and positive association with USFR.

Conclusions: The results of the current study proved association between mindfulness, stress and food habits among adolescents. Also, healthy food habits were proved to be associated with better gingival health and higher salivary flow rate. It has also suggested that parental counselling and wellbeing interventions should be provided to school-going adolescents.

KEYWORDS : Trait mindfulness, Perceived stress, Food habits, Unstimulated salivary flow rate, Gingival health, Dental caries

INTRODUCTION

Health is the major resource for living the entire life. It includes fitness related to an individual's physical, mental and social wellbeing. An individual can get better and recover from an ailment and other complications as soon as possible. There are various factors that determine good health. These comprise the genetic makeup, surrounding environment, connections with people, and education. A healthful diet, exercise, screening for diseases, and coping strategies improve the being's health. In recent times, irrespective of age, among all domains, mental health has been much discussed and explored majorly.[1]

The entire clan of human beings, apart from those with certain parts of their brain damage. They have an inborn proficiency to be mindful and conscious of ongoing experiences and tasks. Nevertheless, there is a great inconsistency in being aware and sensible both inside and between individuals.[2]

As of now, special attention has been generated concerning the human ability for improved concentration and awareness of various life experiences, which has been termed trait mindfulness. It is as an in-built state of consciousness that differs amongst humans. It is often regarded as the existence or non-existence of an individual's alertness considering what is going around him. The present research is being directed more recently to discover the association between trait mindfulness and human health and its motor and sensory functioning.[3] Trait mindfulness constitutes various positive and negative domains. Among such domains one of the negative domain is stress.[4]

Stress is an internal response reaction to the conditional pressure or threat that comes from the surrounding environment. An individual is going through many feelings when he is under stress. An individual may feel apprehensive, worried, anxious, distressed or on the edge of life. It also elicits the massive rush of certain hormones. Among them, adrenaline which momentarily disturbs the nervous system, is the most

crucial hormone. It does have an emotional impact on individuals of all the age groups during their life time.[5]

Life Stages refers to the various facets of life through which an individual passes in their normal lifetime. These are the stages of the human life cycle involving their evenly common and uniform interests, actions, behaviours comprising the whole human race such as infancy, childhood, adolescence, young adulthood, mid-life and old age. Adolescents (between 10-19 years of age) is a intermediate phase of growth and development between juvenile period and adulthood. Nowadays, adolescents also faces stress from many types of disputes breeding in their daily life. Due to this, the performance of an adolescent under stress get changed, but each adolescent reacts in a different way. Some adolescents withdraw themselves from others, while some hit at others, and some keenly seek out the comfort from others.[6]

Nowadays, due to the advancement, modernisation and influence of social media influences all young and late adolescent students going in schools and colleges. This population group tends to more likely develop the bad body image due to the peer pressure and negative criticism. This sort of environment under high stress usually disturb their eating behaviours and pattern which further might influence the oral cavity. Therefore, current cross-sectional questionnaire survey among school-going adolescents was performed to assess the relationship between trait mindfulness, stress, eating behaviors, unstimulated salivary flow rate and their oral health.[7]

Young students are affirmed with taking acute stress while learning for examinations, tests, and for viva sessions. Ever since the time, it is realised that most of the stress comes is through the academic field. As there is endless competition and the enormous amount of content to be studied in a limited time. Therefore in this study, adolescent population has been undertaken for research purpose.[7]

"Stress" is a general psychological condition that also includes the perceived stress. It is the feeling or the thought that an individual is going through at a certain point of time. These are the feelings that are related to impulsiveness.[8]These are totally unpredictable and uncontrollable of one's life. These things reflects that how often an individual has to deal with annoying and infuriating disturbances. Perceived stress indicates the change which is occurring in one's life, and it challenges the self-confidence and one's ability to deal with troubles.[9] Human beings further down stress lean towards behavioural changes like smoking, negatively disturbed eating food habits, poor oral hygiene maintenance, clenching or grinding of teeth. Specifically, adolescents are easily subjected to frame negative body image about themselves, leading to disturbed eating behaviours.[10]

Oral health is an essential component of general health and wellbeing at every single stage of life. It has been recognised till now that oral health and general health are completely interlaced with each other. Therefore, it is essential to determine the appropriate oral health care programmes and health care strategies both at the individual and community care levels. As the mouth serves as a "window" to the rest of the body by giving warning signals of general health disorders. Therefore, nutritional and healthy food aids healthy and disease-free mouth leading physically fit body. When a person is physically fit it automatically enhances the social interaction with people and encourages self-esteem, self-regard and enhances feelings of wellbeing.[11]

Salivary fluid composites the combine mixture of both major and minor salivary gland secretions. It serve as self-cleanser in the oral cavity, contributing in mastication of food and then allowing the enabling the food to swallow.[12] Saliva act as a protective coat of the oral hard and soft tissues. As it facilitates the clearance of food debris and sticky sugar particles which imbalances the pH of the oral cavity. It neutralise acids produced by aggregation and colonisation of microbes via buffering capacity, supports remineralisation of tooth enamel and has other antimicrobial properties.[13]

There are numerous documentation available on the acute stress and salivary flow rate. It has also been stated that salivary flow rate is decreased by various stressors such as examinations, viva sessions, memory test, self-obsession, ideal body image influenced by social media, competition among youth for Instagram posts, beauty, obsession towards esthetic and peer pressure.[14] It has been observed that a number of pathologies in the oral cavity are associated with the stress. Few of them are the periodontal diseases, including pocket formation, calculus deposition, acute necrotizing ulcerative gingivitis, dental caries, recurrent aphthous ulcerations, and upper respiratory infections and many more.[15]

The attitudes and behaviours towards eating habits are moulded by various multitudinal factors including psychological factors and stress. Further, these beings under the influence of acute stress seems to change their behavioural habits which have been discussed.[16] Among the above stated risk factors adequate solid evidence exploring the relationship between Mindful Attention, Stress, Eating habits and oral health is not available. Henceforth the present research aimed to assess the potential relationship between psychological factors, eating habits and oral health among Adolescents.[17]

Methodology:
A cross-sectional epidemiological study was carried out to assess the association of Trait Mindfulness, Stress, Adolescent Food Habits with oral health status among school-going adolescents aged 14-18 years old attending schools in Faridabad. Ethical clearance has been sought from the Ethical Committee of "Sudha Rustagi College of Dental Sciences and Research", Faridabad after presenting aim, objective and procedures of the study.

The study was conducted in high secondary schools at Faridabad in Haryana. A list of all registered Schools in Faridabad was obtained from the website of Department of Education of Haryana state. The schedule for the examination was prepared. This study was directed from December 2019 to March 2020. A maximum of 25 subjects were examined on each day. Data was collected through a combination of Interviewer administered questionnaire and clinical examination performed on them. It was recorded on specially designed proforma.

Adolescents aged 14-18 years old attending schools in Faridabad. Adolescents who were present on the day of examination, whose parents have signed the consent letter and who were ready for the participation in the study, were included. Adolescents who were having major systemic disease, craniofacial deformities, syndromes or those who were on long term medication were excluded from the study. Required sample was obtained using cluster sampling technique with school as sampling unit. Cluster size was predecided as 100 students per school. To achieve the sample size of 400 students, (400/100 = 4), four schools were required. To substitute for the refusal to participation and incomplete questionnaires, one extra school was included.

In the current study, exposures were trait mindfulness, Stress and Food Habits while outcomes assessed were Dentition Status, Plaque Index, Gingival Index and the unstimulated salivary flow rate. Background variables involved in the present study were age, gender, oral hygiene habits.

The independent variables were measured through proforma included questionnaire for the survey on adolescents. Questionnaires included Mindful Attention Awareness Scale, Perceived Stress Scale, Adolescent Food Habit to measure Trait mindfulness, stress, and food habits respectively. Oral examination was conducted to assess Dentition Status (WHO criteria 2013), Plaque index, Gingival index, Unstimulated salivary flow rate. A single examiner, assisted by a trained recording person was conducting all the examinations. The calibration of the investigator was done prior to the pilot study under the guidance of staff members in the Department of Public Health Dentistry, Sudha Rustagi College of Dental Sciences and Research, Faridabad. Sample size estimation was done by using **GPower software (version 3.0).** Sample size was estimated for t test and Correlation: Point biserial model was chosen. Anticipating the correlation between Stress score (as assessed by PSS) & Unstimulated salivary flow rate for the same subject as 0.18 (as assessed in pilot study), a type I error risk of 0.05, a minimum sample size of **391** patients to guarantee 95% power. This was rounded off as 400.

The data was analysed using IBM Statistical Package for Social Sciences (SPSS) version 21. As the responses for MAAS, PSS & AHFC were recorded either on Ordinal/Nominal scale, thus Non parametric tests, i.e., Kruskal Wallis & Mann Whitney U tests were used. For agewise and genderwise comparison of unstimulated salivary flow rate, Parametric tests, i.e. One way ANOVA and independent t-test were used. Spearman correlation coefficient was used to correlate MASS, PSS and AHFC with the clinical variables. Chi-square test was used for comparison of nominal variables. A level of $p<0.05$ was considered statistically significant.

RESULTS:
A total of 400 adolescents, selected from 4 schools of Faridabad District were included in the study. Out of which, 150 (37.5%) were males and 250 (62.5%) were females. Among the study participant, 16 (4.0%) adolescents belonging to 14 years of age, 7 (43.8%) were males and 9 (56.3%) were females. Among 76 (19.0%) belonging to 15 years of age, 34 (44.7%) were males and 42 (55.3%) were females. Among 121 (30.3%) adolescents belonging to 16 years of age, 36 (29.8%) were males and 85 (70.2%) were females. Among 187 (46.8) adolescents belonging to 17 years of age, 73 (39.0%) were males and 114 (61.0%) were females. (Table 1)

In the present study, the overall Mean ± SD MAAS Number of study population was 39.79 ± 6.66 with mode of 34 and median 39. The value of MAAS number ranged from 28.00 to 58.00. (Table 2)

In the current study, 86.0% (344) of the study participants were having moderate level of stress and 14% (56) of the study participants were having high level of stress. (Table 3) The total mean scores AHFC was 4.76 ± 2.15 with mode of 3.00 and median 4.00 with minimum range of 1.00 and maximum range of 9.00. (Table 4) Among 400 adolescents, the decayed teeth were present among 16.5% (66) participants, Filled teeth with decay were present among 3.5% (14) participants, Filled teeth without decay were present among 4.8% (19) participants, Missing teeth due to caries were present among 2.0% (8) participants and Traumatic teeth were present among 3.8% (15) participants. The Prevalence of DMFT among the study population was 24.3% (97). (Table 5)

The Spearman correlation coefficient between MAAS scores and PSS scores was found to be significant, with very weak negative correlation. The Spearman correlation coefficient between MAAS scores and AHFC scores was not found to be significant, with very

weak negative correlation. The Spearman correlation coefficient between MAAS scores and DMFT scores was not found to be significant, with very weak negative correlation. The Spearman correlation coefficient between MAAS scores and PI scores was not found to be significant, with very weak positive correlation. The Spearman correlation coefficient between MAAS scores and GI scores was not found to be significant, with very weak negative correlation. The Spearman correlation coefficient between MAAS scores and USFR scores was not found to be significant, with very weak positive correlation.

It was found that school-going adolescents with increased mindful ability to cope the daily living things suffered with the least perceived stress. (Table 6)

The Spearman correlation coefficient between PSS scores and AHFC scores was found to be significant, with very weak negative correlation. The Spearman correlation coefficient between PSS scores and DMFT scores was not found to be significant, with very weak positive correlation. The Spearman correlation coefficient between PSS scores and PI scores was found to be significant, with very weak positive correlation. The Spearman correlation coefficient between PSS scores and GI scores was not found to be significant, with very weak positive correlation. The Spearman correlation coefficient between PSS scores and USFR scores was found not to be significant, with very weak positive correlation. (Table 7)

The findings of the study suggested that adolescents who suffered from high stress, their healthy eating habits were disturbed and were negatively affected. Also due to high stress present among them their plaque was found to be high, resulting in poor oral health.

The Spearman correlation coefficient between AHFC scores and DMFT scores was found not to be significant, with very weak positive correlation. The Spearman correlation coefficient between AHFC scores and PI scores was found to be significant, with a weak positive correlation. The Spearman correlation coefficient between AHFC scores and GI scores was not found to be significant with a very weak positive correlation. The Spearman correlation coefficient between AHFC scores and USFR scores was found to be significant, with very weak negative correlation. (Table 8)

The current study revealed that the school-going adolescents who had healthy eating habits their plaque levels increased probably due to local factors. Also their salivary flow was found to be slightly low.

DISCUSSION:
Numerous theoretical, divine, mystical and psychosomatic customs highlights the significance of the worth of mindfulness and consciousness for the good health and wellbeing. Every human being tries to train and exercise it's major abilities of performing its task to the fullest of consciousness i.e attention, alertness and awareness. Since today, the association between consciousness and wellbeing has established very slight practical consideration. Among many, one of the most important quality in conjunction to wellbeing is the trait mindfulness.[18]

Among the four stages of Life course, adolescence is the most appropriate time to develop positive health behaviours that can continue throughout life. Simultaneously, it is the most susceptible phase in terms of the progression of diseases that are evident during adulthood. They encounter many factors that threaten their health during their growth and development stages. Especially the adolescents living in developing countries majorly face problems of inadequate/ unhealthy eating habits and lifestyle, obesity, malnutrition and chronic diseases.[19]

Adolescence is an age where individuals adopt habits that may be carried forward well into adulthood including tooth-brushing, smoking and dietary habits. Diseases that begin at this stage in life and continue uncontrolled may start cumulative destruction that becomes difficult to tackle later. Therefore, the present study was conducted to assess the existence of trait mindfulness practices in the school-going adolescents, along with their stress levels, eating habits, and their oral health status. Trait mindfulness was assessed through MASS, stress through Perceived Stress Scale (PSS) and eating habits through AHFC, Dentition status (WHO 2013) for oral health status.

Mindfulness involves distinguishing the event or situation from the

sensations, images, feelings and thoughts that it evokes or the judgements it prompts and could thus reduce emotional distress in adolescents.[20]

Peer pressure, tight academic schedule, competition, burden of achieving various targets contribute towards the development of psychological stress among these individuals, during this critical period of their life.

In the present study, among 400 school-going adolescents (62.5%; girls and 37.5%; boys), 86.0% reported moderate level of stress, and 14.0% reported high level of stress. However, these Findings are dissimilar to that reported by Lindholdt et al, where among 11,682 adolescents (51.0%; girls and 49.0%; boys).[21] 29.6% reported low PSS, 30.2% reported moderate PSS and 25.2% reported high PS.

In the present study, the total mean AHFC score was 4.93 ± 2.17 ranging from 1.00 to 9.00 was reported. The above mentioned finding was comparatively very low as compared to that reported by Taleb S, 2021 among 14 to 19 years adolescents: 11.50 ranging from 8.00 to 15.00.[22]

These findings drew attention towards the fact that unhealthy eating habits observed among adolescents in this study are a common finding in this age group. Unhealthy dietary patterns among adolescents are associated with adverse health implications, including weight gain and increased risk of obesity, cardiovascular diseases, Type-2 diabetes, hypertension, chronic kidney disease, some types of cancers and sarcopenic obesity and it the impaired quality of life. Since adolescence is a critical period of life during which eating behavior and food preferences are established, and these often track into adulthood, thus influencing adult health and quality of life.[23]

The present study reported the prevalence of Decayed teeth, Filled teeth without decay, Filled teeth with decay, Missing teeth, DMFT 16.5%, 3.5%, 4.8%, 2.0% and 24.3% respectively. These findings are similar to that reported by Alshahrani et al (2018)[24] where overall prevalence of 15%, with individual components as Decayed teeth: 73%, Missing teeth: 5.9%, Filled teeth: 21.1% but dissimilar to reported by Jain.et al (2014)[25] where prevalence of dental caries was 50.48% with 45% in males and 55.45% in females. These findings suggest that the adolescent age group, could be at high risk for dental caries due to their behaviors in which they spend longer times outdoors, also they are habitual of consuming junk food between meals.

In the current study, the correlation between MAAS scores and PSS scores was found to be significant, with very weak negative correlation. It has been chronically observed that the trait mindfulness is associated negatively with multiple mental health indicators including anxiety, hostility, stress, depression, impulsiveness, somatization, disturbed mood, neuroticism, and positively associated with mental and physical health including self-esteem, optimism, autonomy, self-control, perceived general health and psychosocial measures.[26] Biegel et al. (2009)[27], also reported that a Mindful Based Stress Reduction intervention led to improvements in a mixed sample of adolescents with mental health problems. The Mindful Based Stress Reduction interventions could help teenagers to learn to treat their thoughts or negative judgements of themselves simply as thoughts instead of as events that reflect reality, and therefore promote greater self-acceptance. Such a change would be important, as it would improve their mental health and psychosocial adjustment.

The correlation between PSS scores and AHFC scores was found to be significant with a very weak negative correlation. This indicates the stress present in adolescents influences the disturbed eating habits in them. Similar findings were reported by Hudd et al. (2000)[28] where students of high stress group generally had higher unhealthy eating food habits as compared to low stress group.

Framson et al (2009)[29] characterized mindful eating by an increased awareness and responsiveness to satiety, hunger, energy levels, emotions under different environmental surroundings by an individual. Researchers have shown increased mindfulness results reduction in binge eating and sugar consumption. Sugar consumption alters salivary pH. Later on this altered salivary flow rate, it might act as a contributing factor in the initiation of caries process. Also, reduced salivary amount results in the worsening of oral health. Due to consumption of sugary and cariogenic food there is change in bacterial

composition of saliva. The altered salivary flow rates might compromise the structural integrity of both the soft and hard tissues in the oral cavity. Therefore, salivary flow rate, buffering capacity, pH, calcium, phosphate, and fluoride ion concentrations are essential factors in the determination of periodontal diseases and dental caries.[29]

Nowadays, every being is so much busy in their own daily life tasks and they are bushed up with their household tasks and persistent pressure of doing productive things at their jobs. This excessively demanding and drained life results an intensified stress which elicit the numerous psychological conditions such as depression, anxiety, and substance abuse. These factors indirectly contributes towards the deterioration of gingival health through the chemical mediators of inflammation. The results of the present study found an association between mindfulness, stress and food habits. The current study revealed the inability to pay attention mindfully in the daily activities of school-going adolescents was due to stress that they have been going through, which influence their choices of unhealthy eating habits, contributing to poor oral health.

Limitations
The foremost flaw of this study is its observational cross-sectional design, which does not provide us evidence about the temporality of stress exposure. As patient's answered the questions under stress that may imitate recent symptoms, on the contrary, dental caries is a prolonged and cumulative disease. Also, adolescents have self-reported the answers rather than using the direct observation instruments. Therefore, the respondents might have contributed to the incorrect information.

Implication
A causal relationship between the stress and eating behaviours and oral health was seen. Therefore, the clinical implication should be to inform individuals about stress as a possible risk factor for dental diseases and additional preventive strategies in these individuals should be suggested.

Table 1: Age and gender profile of study population

AGE GROUPS	Males		Females		Total	
	n	%	n	%	N	%
14 years	7	43.8%	9	56.3%	16	4 %
15 years	34	44.7 %	42	55.3 %	76	19 %
16 years	36	29.8%	85	70.2%	121	30.3 %
17 years	73	39.0%	114	61.0 %	187	46.8 %
Total	150	37.5%	250	62.5 %	400	100 %

Table 2: Descriptives of MAAS items

	N	Mean	SD	Mode	Median	Minimum	Maximum
MAAS Number Total	400	39.79	6.66	34	39.00	28.00	58.00

Table 3: Distribution of study population according to different level of Stress subgroups

Stress Categories	N	%
Moderate Stress (PSS Scores 14-26)	344	86.0 %
High Stress (PSS Scores 27-40)	56	14.0 %
Total	400	100.0%

Table 4: Total mean score of AHFC items

	N	Mean	SD	Mode	Median	Minimum	Maximum
AHFC scores total	400	4.76	2.15	3.00	4.00	1.00	9.00

Table 5: Prevalence of different codes of dentition status

	N	%
Decayed	334	16.5%
Filled with decay	386	3.5 %
Filled without decay	19	4.8 %
Missing due to caries	8	2.0 %
Trauma	15	3.8 %
DMFT	97	24.3 %

Table 6: Correlation of MAAS with PSS, AHFC, DMFT, PI, GI and USFR

Correlation of MAAS Scores with	Spearman Correlation coefficient	P value
Mean PSS scores	-0.102	0.042*
Mean AHFC	-0.066	0.051
Mean DMFT	-0.039	0.432
Mean PI	0.007	0.893
Mean GI	-0.007	0.889
Mean USFR	0.043	0.393

Spearman Correlation coefficient, * Significant value p<0.001

Table 7: Correlation of PSS with AHFC, DMFT, PI, GI and USFR

Correlation of PSS Scores with	Spearman Correlation coefficient	P Value
Mean AHFC	-0.123	<0.014*
Mean DMFT	0.014	0.784
Mean PI	0.188	<0.001*
Mean GI	0.001	0.991
Mean USFR	0.041	0 .411

Spearman Correlation coefficient, * Significant value p<0.001

Table 8 : Correlation of AHFC with DMFT, PI, GI and USFR

Correlation of AHFC Scores with	Mean scores Correlation coefficient	AHFC	P Value
Mean DMFT	0.030		0.550
Mean PI	0.238		<0.001*
Mean GI	0.137		<0.006
Mean USFR	-0.188		<0.001*

Spearman Correlation coefficient, * Significant value p<0.001

CONCLUSION:
The results of the present study found association between mindfulness, stress and food habits. Their incapability to pay attention attentively and mindfully in their everyday actions because of stress upset their choices of food intake. This in turn shows unfavourable results in their oral health. Also, healthy food habits were found to be associated with better gingival health. A causal relationship between the stress and eating behaviours was observed. Therefore, the clinical implication came out to be creating awareness and informing individuals about stress as a possible risk factor for dental caries and to inculcate supplementary preventive strategies in these individuals.

Conflicts of interest
The authors of manuscript declare that they have no conflicts of interest, real or perceived, financial or nonfinancial in this article.

REFERENCES
1. Fernández-Abascal EG, Martín-Díaz MD. Dimensions of emotional intelligence related to physical and mental health and to health behaviors. Front. Psychol. 2015; 6(2):317-21.
2. Westen D. The scientific status of unconscious processes: Is Freud really dead. J Am Psychoanal Assoc. 1999; 47(4):1061-106.
3. Baars BJ, Gage NM. Cognition, brain, and consciousness: Introduction to cognitive neuroscience. Academic Press; 2010; 12(4):86-92.
4. Toates F. A model of the hierarchy of behaviour, cognition, and consciousness. Consciousness and cognition. 2006; 15(1):75-118.
5. Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological wellbeing. J. Pers. Soc. Psychol. 2003; 84(4):822-29.
6. Black DS, Sussman S, Johnson CA, Milam J. Psychometric assessment of the mindful attention awareness scale (MAAS) among Chinese adolescents. Assessment. 2012; 19(1):42-52.
7. Fetterman AK, Robinson MD, Ode S, Gordon KH. Neuroticism as a risk factor for behavioral dysregulation: A mindfulness-mediation perspective. J Soc. Clin. Psychol. 2010; 29(22):301–21.
8. Iqbal S, Gupta S, Venkatarao E. Stress, anxiety and depression among medical undergraduate students and their socio-demographic correlates. Indian J Med Res. 2015; 1(41):354-57.
9. Johnson F, Wardle J, Griffith J. The adolescent food habits checklist: reliability and validity of a measure of healthy eating behaviour in adolescents. Eur. J. Clin. Nutr. 2002; 56 (7):644-52.
10. De Vriendt T, Clays E, Huybrechts I, De Bourdeaudhuij I, Moreno LA, Patterson E, Molnar D, Mesana MI, Beghin L, Widhalm K, Manios Y. European adolescents' level of perceived stress is inversely related to their diet quality: The Healthy Lifestyle in Europe by Nutrition in Adolescence study. Br. J. Nutr.2012; 108(2):371-80.
11. Cattanach L, Malley R, Rodin J. Psychologic and physiologic reactivity to stressors in eating disordered individuals. Psychosomatic medicine. 1988; 50(12):591-99.
12. Lee W, Lee MG, Moon HR, Cho JW. A clinical study on measuring method of the salivary flow. IJCPD. 2013; 9 (1):31-38.
13. Shimazaki Y, Fu B, Yonemoto K, Akifusa S, Shibata Y, Takeshita T, Ninomiya T, Kiyohara Y, Yamashita Y. Stimulated salivary flow rate and oral health status. J Oral Sci. 2016; 16(12):37-42.
14. Baron-Cohen S, Ring H, Moriarty J, Schmitz B, Costa D, Ell P. Recognition of mental state terms. Br. J. Psychiatry. 1994; 165(5):640-49.
15. Hendriks AM, Bartels M, Stevens GW, Walsh SD, Torsheim T, Elgar FJ, Finkenauer C. National child and adolescent health policies as indicators of adolescent mental health: A

multilevel analysis of 30 European countries. J. Early Adolesc.2020; 40(4):537-65.

16. Silness J, Loe H. Periodontal disease in pregnancy II. Correlation between oral hygiene and periodontal condition. Acta Odontol Scand.1964; 22 (1):121-35.

17. Loe H, Silness J. Periodontal disease in pregnancy I. Prevalence and severity. Acta Odontol. Scand.1963; 21(6):533-51.

18. Lau JY, Eley TC, Stevenson J. Examining the state-trait anxiety relationship: a behavioural genetic approach. J. Abnorm. Child Psychol. 2006; 34(1):18-26.

19. Koca B, Arkan G. The relationship between adolescents' nutrition literacy and food habits, and affecting factors. Public Health Nutr.2021; 24(4):717-28.

20. Diaz Gonzalez MD, Perez Duenas C, Sanchez Raya MA, Moriana Elvira JA, Sanchez Vazquez V. Mindfulness-based stress reduction in adolescents with mental disorders: A randomised clinical trial. Psicothema. 2018; 28(14):113-24.

21. Lindholm L, Labriola M, Andersen JH, Kjeldsen MM, Obel C, Lund T. Perceived stress among adolescents as a marker for future mental disorders: A prospective cohort study. Scand. J. Public. Health. 2021; 1(12):140-48.

22. Taleb S, Itani L. Nutrition Literacy among Adolescents and Its Association with Eating Habits and BMI in Tripoli, Lebanon. Diseases. 2021 Jun;9(2):25.

23. El Tantawi M, AlAgl A. Association between gingivitis severity and lifestyle habits in young Saudi Arabian males. EMHJ.2018; 24(6):504-11.

24. Alshahrani I, Tikare S, Meer Z, Mustafa A, Abdulwahab M, Sadatullah S. Prevalence of dental caries among male students aged 15–17 years in southern Asia, Saudi Arabia. Saudi Dent J.2018; 30(3):214-18.

25. Jain M, Singh A, Sharma A. Relationship of perceived stress and dental caries among pre-university students in Bangalore City. JCDR. 2014; 8 (11):131-37.

26. Baron-Cohen S, Ring H, Moriarty J, Schmitz B, Costa D, Ell P. Recognition of mental state terms. Br. J. Psychiatry. 1994; 165(5):640-49.

27. Biegel GM, Brown KW, Shapiro SL, Schubert CM. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized clinical trial. J Consult Clin Psychol.2009;77(5):855-62.

28. Hudd SS, Dumlao J, Erdmann-Sager D, Murray D, Phan E, Soukas N, Yokosuka N. Stress at college: effects on health habits, health status and self-esteem. Coll. Stud. J. 2000; 1(12); 34-44.

29. Frampton C, Kristal AR, Schenk JM, Littman AJ, Zeliadt S, Benitez D. Development and validation of the mindful eating questionnaire. J. Am. Diet. Assoc. 2009; 109(8):1439-42.