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DIETARY BEHAVIORS AND FOOD CHOICES DURING ONLINE AND PHYSICAL CLASSES: A COMPARITIVE STUDY AMONG COLLEGE GOING GIRLS (18-25 YEARS) STUDYING IN DELHI

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Abstract: India reported the first case of COVID-19 in Kerala on 30th January 2020. On 25th March 2020, a complete lockdown for 21 days was imposed in India. It has been more than a year since the first lockdown in India due to COVID-19 as a result of which colleges remain shut for most of the time. Online classes are the new normal for the students since then. Objective of this study was to compare the changes in dietary behavior and food choice due to online classes and physical classes among college going girls (18-25 years) studying in Delhi on account of COVID-19. The participants included college going girls (18-25 years) studying in Lady Irwin College, University of Delhi (n=110). Cross-sectional study design was used. Data was collected in January 2021 after taking the consent of the participant through questionnaire via Google forms. The data was coding and analyzed on MS Excel. Continuous data was analyzed using measures of central tendencies. For the categorical data, chi square test was used for analysis of data. Consumption of baked goods increased 5.4% in physical classes to 11.8% in online classes. Consumption of fruits and salads and homemade food also increased during online classes accounting for 17.3% and 33% respectively. Consumption of carbonated beverages decreased from 18.1% to 3.6%. Students binge eat more frequently during physical classes (37.3%). There has been significant differences ($p < 0.05$) between online and physical in terms of binge eating and food choices among students.

Index Terms - COVID-19, Dietary behavior, Food choices, Eating pattern, College girls

I. INTRODUCTION

India's first confirmed case of COVID-19 was reported in Kerala on 30th January 2020 (Perappadan, 2020). In response to the rapid spread globally, on 25th March 2020, Government of India announced a nation-wide lockdown for 21 days to break the chain of massive transmission of COVID-19 at the early stage (Frayer, 2020).

As the lockdown extended, every one opted for work from home. Use of technology helped in saving time as well as reducing contact and hence reducing the transmission of COVID-19 (Sun et al., 2020). As institutes around the world remain close, the education sector was worst affected. It was estimated that about 91% of the students were not attending schools or colleges since corona outbreak (UNICEF, 2020). Various international organizations like the World Bank in assistance with the department of education was helping students to provide remote learning opportunities (UNESCO, 2020).

According to the Hindustan Times in India total internet consumption went up by 13% after the implementation of lockdown as reported by Department of Telecommunication (Madhukalya, 2020). With the shift of meetings, classes and social interaction into the digital platform, there has been a sudden increase in the usage of video-conferencing apps like Google Meet, Microsoft Teams and Zoom Cloud Meetings, etc. (John, 2020).

Advantages of online mode of learning include safety of the students at the time of pandemic from corona virus, affordable as it enhances the communication between students and teachers. Since online classes provide a platform where the sessions could be saved for future reference, it had made the process of learning a lot easier. But on the other hands, demerit of online classes cannot be ignored since a lot of students did not have access to high speed internet/smart phone which is essential for online classes. Also, interpersonal relationship due to face to face interaction was hampered during online classes (Jena, 2020).

College going students tend to make poor decisions with respect to their dietary habits which maybe caused as a result of absence of parental supervision and lack of knowledge. This may be caused due to stress of social, professional as well as academic burden (Kumar et al., 2020). College going students, especially girls exhibit all from all forms of disordered eating behaviors as a

result of body image disturbances. In order to overcome the false preoccupation about their body, they generally resort to unhealthy eating practices like fasting, skipping meals, binge eating and eliminating food groups (Ben Ayed et al., 2019; Frayon et al., 2020). The major cause of malnutrition among the college going girls are associated with inappropriate choice of foods which lack micro nutrient but are high in calories (Mangla et al., 2019).

Since, the online classes still continue to be a major part of student's life for major duration of the day, it becomes essential to understand how it has changed the dietary behaviors and food choices of college going girls in the "New Normal".

II. Objective of the study

The objective of the study was to compare dietary behaviors, food choices and eating patterns during physical and online classes among college going girls (18-25 years) studying in Delhi.

III. MATERIALS AND METHODS

3.1 Study Locale

For this study, Lady Irwin College, University of Delhi was selected as the study locale because it is a hub for girls belonging to the age group of 18-25 years and also due to ease of sample collection as both the researchers were a part of this institute.

3.2 Study participants

The research participants were both undergraduate and post graduate girls studying in Lady Irwin College belonging to the age group of 18-25 years of age. Only those participants were selected who had facility of internet /smartphone and who were willing to participate. Those participants were not selected who had less than 6 months of experience of online classes.

3.3 Sampling

110 students participated in this study (55= Undergraduate and 55= Post graduate). The sample was selected using convenience sampling technique.

3.4 Study design and data collection

Cross sectional study design was used as data was collected at a single point for both pre and during COVID times. For physical classes (pre COVID) data was collected retrospectively. Data collection was done in January 2021 for both online and physical classes through a questionnaire circulated via google form through social media platform-Whats App. Prior to data collection ethical clearance was taken from Lady Irwin Ethical Committee. Due permission was taken from the institution for conduction of study. Consent form and study information sheet was provided to the research participants prior to data collection. Pre-tested was done prior to the data collection for the study to make the tool better. It was done on 10% of the sample. Results were analysed based on the results received.

IV. RESULTS AND DISCUSSIONS

All the participants filled the questionnaire and the data was analyzed using MS Excel. The participants belonged to the age group of 18-25 years. Majority of the participants were 22 years old. The mean age of the participants was 21.01 years.

4.1 Meal pattern of the day

Out of all the girls studying in Delhi University, 72.1% of girls eating home-made food and 56.7% of the girls eating food from the hostel consumed 3 meals a day. (Mangala et al., 2019). Among Indian's, consumption of more food in the lockdown than before was observed and 75% have changed their consumption habits due to change in the routine (Kumar & Dwivedi, 2020).

Figure 1 indicates that during physical classes, 50.9% (n=56) of respondents consumed 3-4 meals per day, 25.4% (n=27) consumed 4-5, 19.1% (n=21) consumed less than 3 and 5.4% (n=6) consumed more than 5 meals in a day of physical classes. Whereas, during online classes, 33.6% (n=37) consumed 3-4, 30.9% (n=34) consumed 4-5, 25.5% (n=27) consumed less than 3 and 10.9% (n=12) consumed more than 5 meals. Although no significant difference was found between the number of meals eaten per day during online and physical classes as $p > 0.05$ ($p = 0.059$, Chi-Square value = 7.43).

Figure 1: Meal pattern during physical and online classes

4.2 Skipping of meals during classes

The prevalence of skipping meals among the college going girls of University was reported to be as high as 41.3% among the girls eating home-made food and 58.8% of the girls eating food from hostel skipped their meals during the regular classes. Only 62.5% of the girls eating home based food and 50.5% of the girls eating food from the hostel reported a regular consumption of

breakfast (Mangala et al., 2019).

In the present study, during the time of physical classes, 42.7% (n=47) did not skip any meals, 29.1% (n=32) indulge in skipping meals "sometimes" and 28.1% (n=31) skipped meals in a day. Whereas, during online classes, 31.8% (n=35) skip[ed meals, 40% (n=44) did not skip any meals and 28.2% (n=31) skipped meals "sometimes" as shown in figure 2.

Figure 2: Skipping of meals during online and physical classes

4.3 Frequency of food consumed from outside

Studies prior to COVID-19 have reported that 13.5% of the girls eating home-made food and 16.5% of the girls eating food from hostel reported daily consumption of unhealthy food whereas only 8.7% and 25.8% respectively consume unhealthy food occasionally (Mangala et al., 2019).

In a day of physical class, 39.1% (n=43) reported consumption of food from outside for about 3-5 times per week. 25.8 (n=28) consumed from outside for about 2-3 times a week,11.8% (n=13) reported rarely, once a week and more than 5 times a week respectively. During online classes 54.5% (n=60) rarely consumed any food from outside, 28.2% (n=31) consumed food from outside once in a week. While 8.2% (n=9) consumed food from outside for about 2-3 times a week, 6.4% (n=7) consumed food outside for about as 3-5 times a week. Only 2.7% (n=3) consumed food outside for more than 5 times in a week. This indicated that majority of the students did not consume food from outside while they were attending online classes as shown in figure 3.

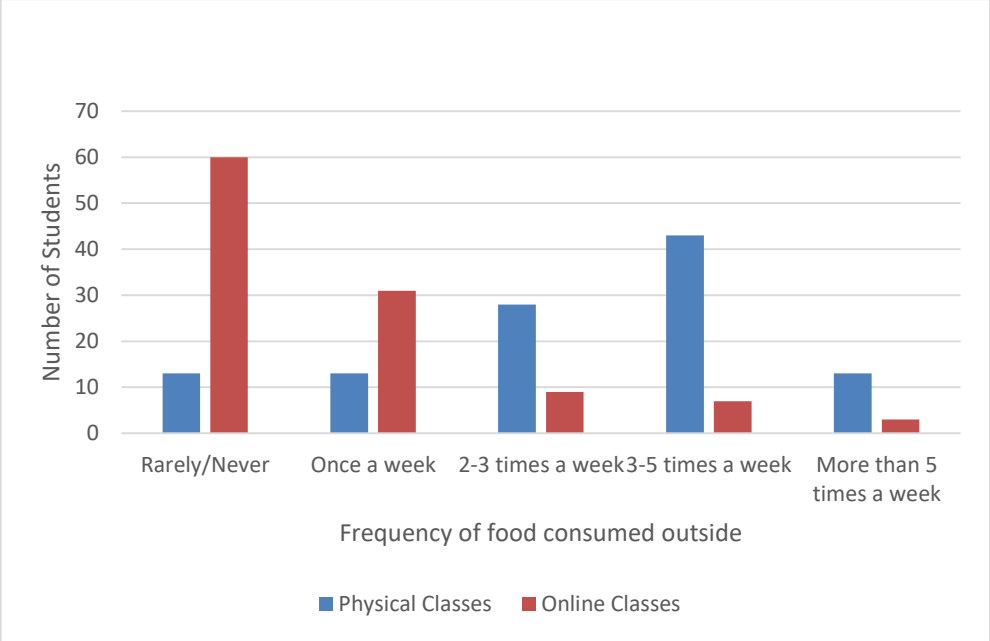

Figure 3: Frequency of food consumed from outside during online and physical classes

4.4 Reason for snack selection

During the physical classes, students chose their snacks majorly i.e. 35.4% (n=39) according to the choice of their friends, 21.8% according to taste preference (n=24), 20.9% according to ease of cooking (n=23), 20% (n=22) by choice of restaurant followed by 1.8% who choose according to potential health benefit of the snack (n=2). Whereas during the online classes food choice was majorly i.e. 54.5% dependent on ease of cooking (n=60), health benefit (n=24), taste preference (n=23), 2.7% choice of restaurant (n=3) as shown in figure 4.

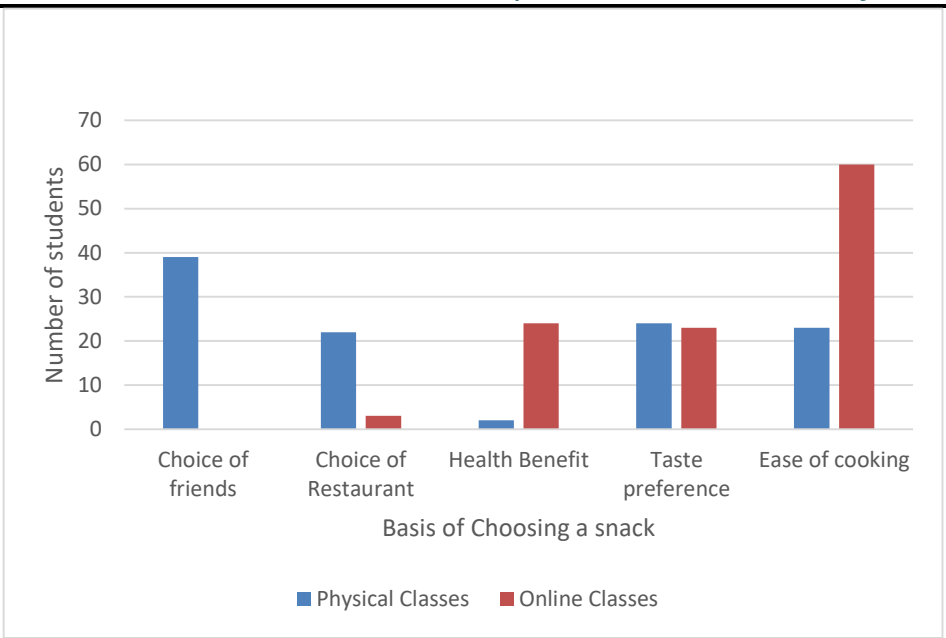

Figure 4: Reason for snack selection during physical and online classes

4.5 Increase in consumption of certain food items

There has been a shift towards healthy eating behavior has been observed with increased consumption of protein-rich foods like eggs and meat, milk and its products and restriction on the consumption of high fat, sugar and salty foods. A marginal increase in the frequency of fruits and vegetables was also seen. It has been observed that there was an up gradation in the quantity of meals consumed with a decrease in the intake of fried foods, fast food dense in calories (Chopra et al., 2020).

A significant difference was observed between the online and physical classes with respect to food choices of students as p value < 0.05 (p= 0.0001, chi square =27.48). During the physical classes, majority 22.7% (n=25) reported increased consumption of packaged foods, 18.1% (n=20) reported increased consumption of carbonated beverages, 17.2% (n=19) reported increased consumption of homemade food, 16.3% (n=18) reported increased consumption of chocolates and ice creams, 13.6% (n=15) reported increased consumption of deep fried foods, 6.3% (n=7) reported increased consumption of fruits and salads and 5.4% (n=6) reported increased consumption of baked products. Whereas during online classes, 30% (n=33) reported increased consumption of homemade food, 17.3% (n=19) reported increased consumption of fruits and salads, 15.4% (n=17) reported increased consumption of chocolates and ice creams, 10.9% (n=12) reported increased consumption of packaged food and deep-fried food each and 3.6% (n=4) reported increased consumption of carbonated beverages as shown in figure 5.

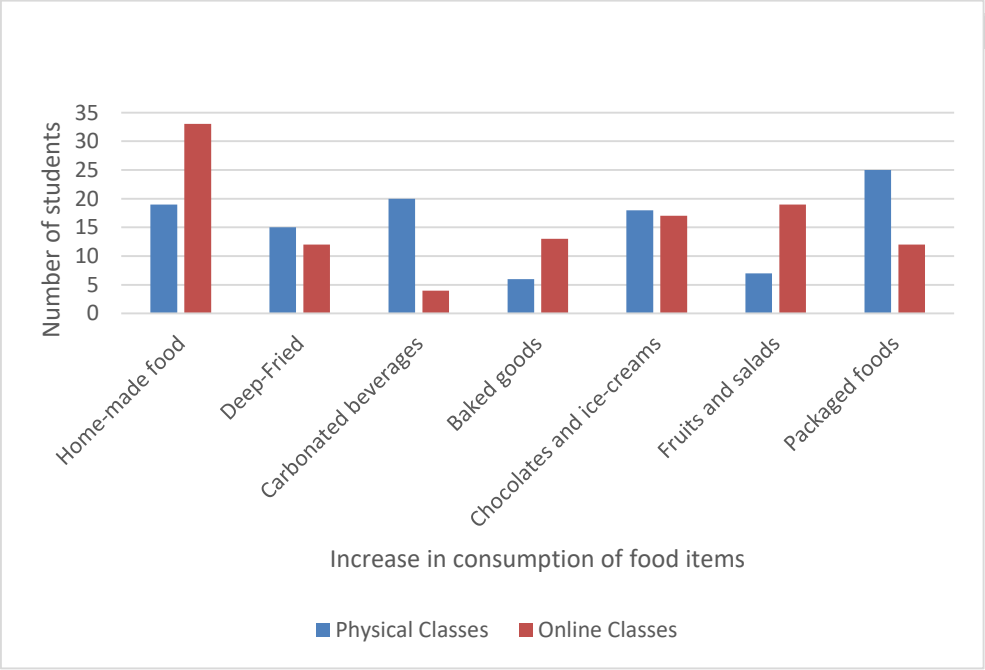

Figure 5: Increase in consumption of certain food items during physical and online classes

4.6 Restraints in consumption of food groups during online classes

A decline in consumption of legumes as compared to before was reported along with an increase in the consumption of saturated fats, sugar and salt than before during the lockdown (Reyes-Olavarría et al., 2020). In addition to this, there has been a decline in the consumption of meat and meat product along with reduced consumption of fast food during lockdown in India. The consumption of dairy products and fresh fruits remained nearly same as compared to before (Narayanan et al., 2020).

However, present study reported that majority of students 29.1% (n=32) reported that they did not restraint any food item during online classes but 20% (n=22) confirmed that they restrained fats and oilseeds from their diet whereas 18.2% (n=20) restrained egg and meat. 9.1% (n=10) restrained cereals, 6.4% (n=7) restrained milk and milk products whereas 1.8% (n=2) restrained pulses during online classes as shown in figure 6.

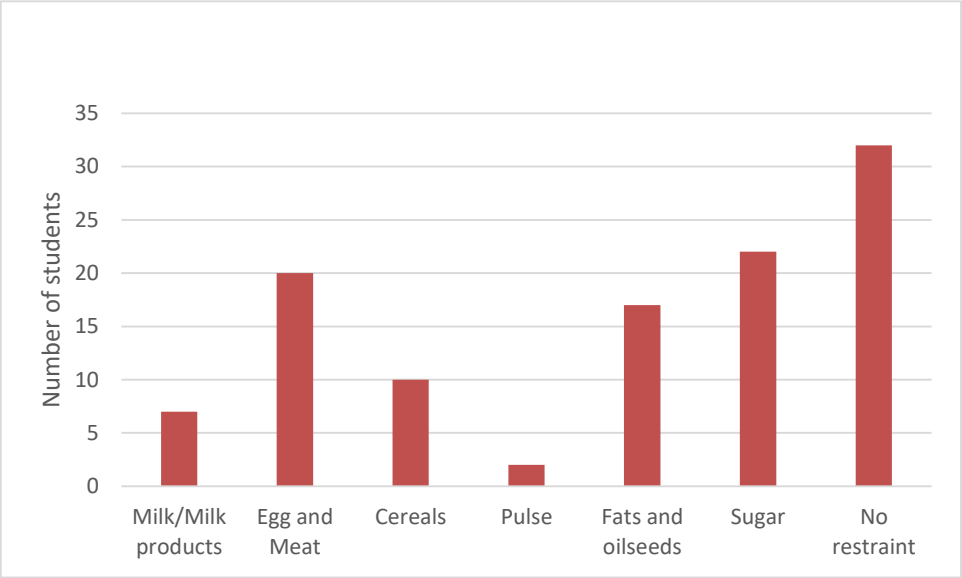

Figure 6: Restraint in consumption of food groups during online classes

4.7 Engagement in binge eating

A difference between indulgence in binge eating during online and physical class was established as $p < 0.05$ ($p=0.003$, Chi Square =15.83). From figure 7, it can be concluded that 43.6% (n=48) so not indulge in binge eating, 37.3% (n=41) indulge in binge eating while 19.1% (n=21) "sometimes" indulge in binge eating. On the other hand, at the time of online classes 70% (n=77) did not indulge in binge eating, 18.2% (n=20) did indulge whereas 11.8% (n=13) indulge in binge eating "sometimes" This indicates that more number of students reported binge eating during the physical classes as compared to online classes.

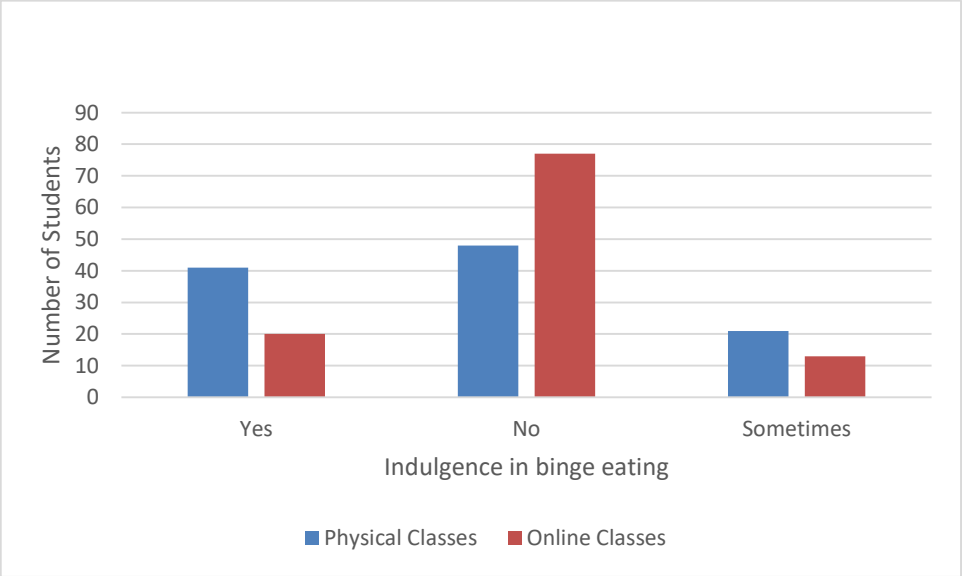

Figure 7: Binge eating during online and physical class

4.8 Introduction of timely eating break during online and physical classes

About 61.8% (n=68) introduced timely break in between classes, whereas 16.4% (n=18) did not introduce timely eating break "sometimes" whereas, 16.4% (n=18) did not include these eating breaks during physical classes. On the other hand, during online classes 31.8% (n=35) introduced, 28.2% (n=31) introduced sometimes and 40% (n=44) did not introduce timely eating breaks in between online classes as shown in Figure 8.

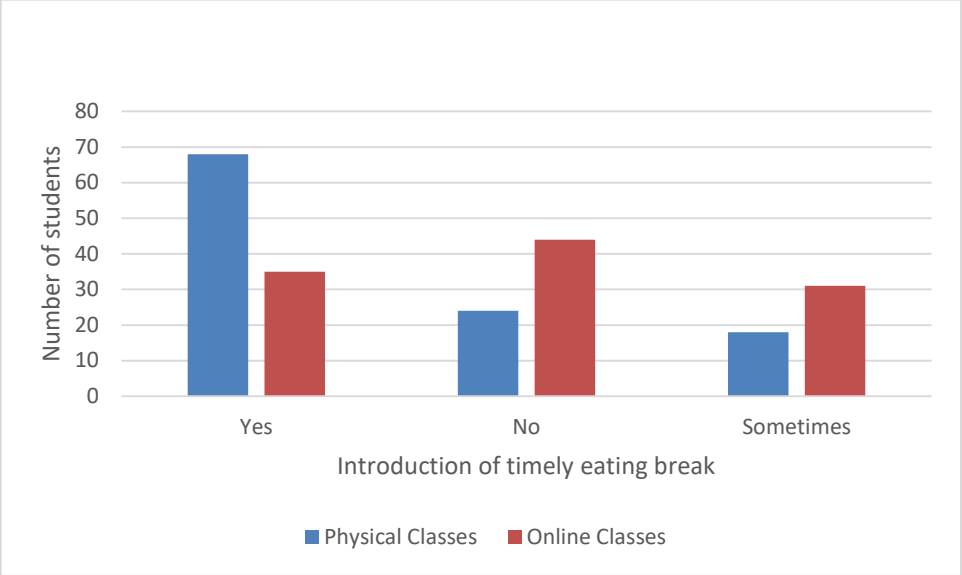

Figure 8: Introduction of timely eating break during online and physical classes

V. CONCLUSION

Online classes affected lives of students to a greater extent because as it caused changes in dietary behaviors, food choices and eating patterns as compared to physical classes during pre-COVID times.Although, there is no difference between dietary behaviors like number of meals eaten and phenomena of skipping meals between physical and online classes. However, majority of the students reported an increased consumption of food from outside during the physical classes as compared to online classes. During the physical classes, consumption of carbonated beverages and packaged food was more whereas, during online classes an increase in the consumption of homemade food and fruits and salads was observed. Consumption of chocolates and ice-cream remains approximately same, consumption of baked goods increased during online classes. Most students did not restrain consumption of any of the food group. More students reported binge eating during physical class as compared to online class.

VI. ACKNOWLEDGMENT

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