BABYLON UNIVERSITY
COLLEGE OF MEDICINE

Prevalence of Obesity among Medical Students at Babylon University

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ABSTRACT

Introduction: In an era marked by escalating global obesity rates, the impact of sedentary lifestyles and increased stress on medical students has become a growing concern. Neglect of healthy habits among this population, often immersed in rigorous academic pursuits, may lead to weight gain and subsequent health complications. As future healthcare providers, addressing these unique challenges early is paramount to mitigate the risk of obesity-related diseases and foster healthier habits within the medical community. Understanding the interplay between lifestyle factors and obesity among medical students is essential for implementing effective preventive measures.

Materials and Methods: A cross-sectional study was conducted among undergraduate medical students aged 18–24 years at the University of Babylon. A questionnaire was developed in both English and Arabic languages, and a link was sent to the students via telegram including height, weight, and waist circumference.

Results: The study was conducted on 362 students, Males: 132 (36.5%) and Females: 230 (63.5%). As for the height-to-weight ratio index on the preclinical group approximately half of the students fit into the “abnormally slim” category (males 51%, females 36%) while there is a generalized increase in weight for most categories as the highest representation of males was in the ”healthy” category with 27% however females in the same category were only 10%.

Conclusion: the observed differences in weight categories between preclinical and clinical students highlight the influence of lifestyle changes and academic stress on health outcomes. Implementing comprehensive health strategies is essential to support the well-being of medical students as they progress through their education.

Introduction

One of the most important health-enhancing habits is eating healthy food such as the consumption of daily requirements of fruits and vegetables, natural foods, and foods containing minerals and vitamins (1). It also entails actions and dietary practices that are advantageous for sustaining and promoting both physical and mental health (2). Various personal social and environmental factors have an impact on healthy eating (3). Due to time constraints and stressors, adult students making the transition from high school to university find it difficult to maintain good eating routines. Instead, they miss meals, consume unhealthy snacks, eat at restaurants, and consume fast food (4). The period spent through college represents a critical period. Additionally, it encompasses stress for students attempting to succeed in their academic goals that could impact both life quality and eating habits (EH) in adulthood (5). According to research by Gan et al., students are more likely to acquire bad eating habits and don't get enough nutrients (6). Irregular mealtimes, skipping breakfast, consuming more fried foods, and eating fewer fruits and vegetables are some of these behaviors (7). Along with dietary changes, inadequate exercise routines, poor time management, and rising levels of stress from schoolwork also contribute to weight increase (8). Because they have more medical information about healthy eating habits, medical students are expected to have good eating habits and lead healthy lifestyles (9).

However, because of their busy schedules and stress, the majority were exposed to unhealthy eating habits. They probably do not have time to cook a healthy meal or exercise (10). Studying the change in dietary habits and lifestyle practices among university students in addition to determining overweight/obesity prevalence among them can help educate them about the importance of preventing the development of chronic diseases by adopting healthy lifestyles.
The incidence of obesity has increased rapidly during recent decades. More than 30% of Americans are obese, as are more than a quarter of men and women in several European countries(11). Obesity is not just a cosmetic consideration. The metabolic changes of obesity can induce serious health problems and can increase the risk of many diseases like hypertension, dyslipidemia, diabetes mellitus, orthopedic complications, gallstones, breast cancer, and psychological disorders(12)(13). The number of years that one lives with obesity, is directly associated with the risk of mortality(14). According to the World Health Organization (WHO), worldwide obesity has more than doubled since 1980, and in 2008(15).

Since the 1960s, the number of overweight and obese persons has continued to rise, a trend that shows no signs of slowing down (16). Overweight and obesity affect more than 1.9 billion persons worldwide, 38 million children under the age of five, and more than 340 million children and adolescents aged 5 to 19 years (17). Obesity affects around 28 percent of males and 44 percent of females in Saudi Arabia (18). Obesity has been linked to a variety of factors in Saudi Arabian women, including their lifestyle, lack of exercise, and household activities, as well as the type of leisure activity they engage in (TV and internet) (19). Obesity is linked to a higher risk of chronic diseases such as hypertension, type 2 diabetes, heart disease, stroke, gallbladder disease, and breast, prostate, and colon cancer (16). Due to their sedentary lifestyle, lack of exercise, disordered eating habits due to a lack of leisure time, increased stress, and wide topics to learn, medical students are more prone to obesity. As a result, individuals are at risk for issues associated with obesity, such as hypertension, dyslipidemia, and impaired glucose tolerance. However, despite the dangers, it is frequently overlooked(20). Obesity is exacerbated by our lifestyle and surroundings, including less physical exercise paired with high-calorie, low-cost foods(16). Obesity has been linked to more than 30 medical disorders, with scientific evidence indicating a strong link with at least 15 of them(16). Obesity, according to research by the RAND Corporation, is more harmful to one's health than smoking, excessive alcohol consumption, or poverty(16).
Our medical students are future healthcare providers. They are by themselves more prone to obesity due to their sedentary lifestyle, stress, and disordered eating habits and spending more time with their books and gadgets. Obese young adults are later prone to many complications such as hypertension, dyslipidemia due, to obesity, diabetes mellitus, coronary artery disease, infertility, stroke, and arthritis(21-23).

Subjects and Methods

Study Design

This cross-sectional study was conducted at the University of Babylon, Iraq. A questionnaire was developed in both English and Arabic languages, and a link was sent to the students via telegram, the study involved only medical students while other majors such as pharmacist and dentistry were excluded from the study.

Sample Size :

A study included all levels from the College of Medicine, including preclinical (1st, 2nd, and 3rd years) and clinical (4th, 5th and 6th) students. The sample size was calculated according to a specific formula. A margin of error of 5%, A along with a confidence level of 95% was predetermined for the calculation. Accordingly, a minimum of 330 students were required for the study. And the study was conducted on 362 students, Males: 132 (36.5%) and Females: 230 (63.5%).

Stage	Number	Percentage (%)
1st	39	10.8
2nd	118	32.6
3rd	64	17.7
4th	118	32.6
5th	7	1.9
6th	16	4.4
Total	362	100

Questionnaire

Anthropometric measurements were taken as follows:

1- Weight measured in the early morning to the nearest (1kg).

2- Height measured without foot wearing to the nearest (1cm).

To measure the BMI >>> calculated as Weight (kg) divided by the Height (m^2)

BMI	WEIGHT STATUS
Below 18.5	UNDERWEIGHT
18.5 – 24.9	NORMAL
25 – 29.9	OVERWEIGHT
30 – 39.9	OBESE
Above 40	MORBID OBESITY

3- Waist circumference was measured under the clothes, at the narrowest point

Female	Male	
0.58 and over	0.63 and over	Highly obese
0.54 – 0.58	0.58 – 0.63	Extremely overweight
0.49 – 0.54	0.53 – 0.58	Overweight
0.46 – 0.49	0.46 – 0.53	Healthy
0.42 – 0.46	0.43 – 0.46	Slender & Healthy
0.35 – 0.42	0.35 – 0.43	Extremely slim
0.35 or below	0.35 or below	Abnormally slim

RESULT

Table 1 :provides demographic information on a group of individuals based on sex, academic year. A total of 362 participants were included in this study. There was a higher representation of females (63.5%) compared to males(36.5%). The distribution across academic years was with the highest representation in the 2nd and 4th year equaly (32.6%) and the lowest in the 5th year (1.9%).

Table 2 : The participants are devided into preclinical group (1st,2nd and 3rd stages) and a clinical group(4th,5th and 6th stages) . In which the preclinical group (n=220) has representation of males(34.5%) and females(65.5%) , And the clinical group (n=142) has representation of males(39.4%) and females(60.6%).

VARIABLE	FREQUENCY	PERCENTAGE
STAGES		
1	39	10.8
2	118	32.6
3	64	17.7
4	118	32.6
5	7	1.9
6	16	4.4
GENDER		
MALE	132	36.5
FAMALE	230	63.5
TOTAL	362	100

Table 1. Distribution of participants according to stage and gender.

VARIABLE	FREQUENCY	PERCENTAGE
PRECLINICAL		
MALE	76	34.5
FEMALE	144	65.5
TOTAL	220	100
CLINICAL		
MALE	56	39.4
FEMALE	86	60.6
TOTAL	142	100

Table 2. Distribution of preclinical and clinical groups according to gender.

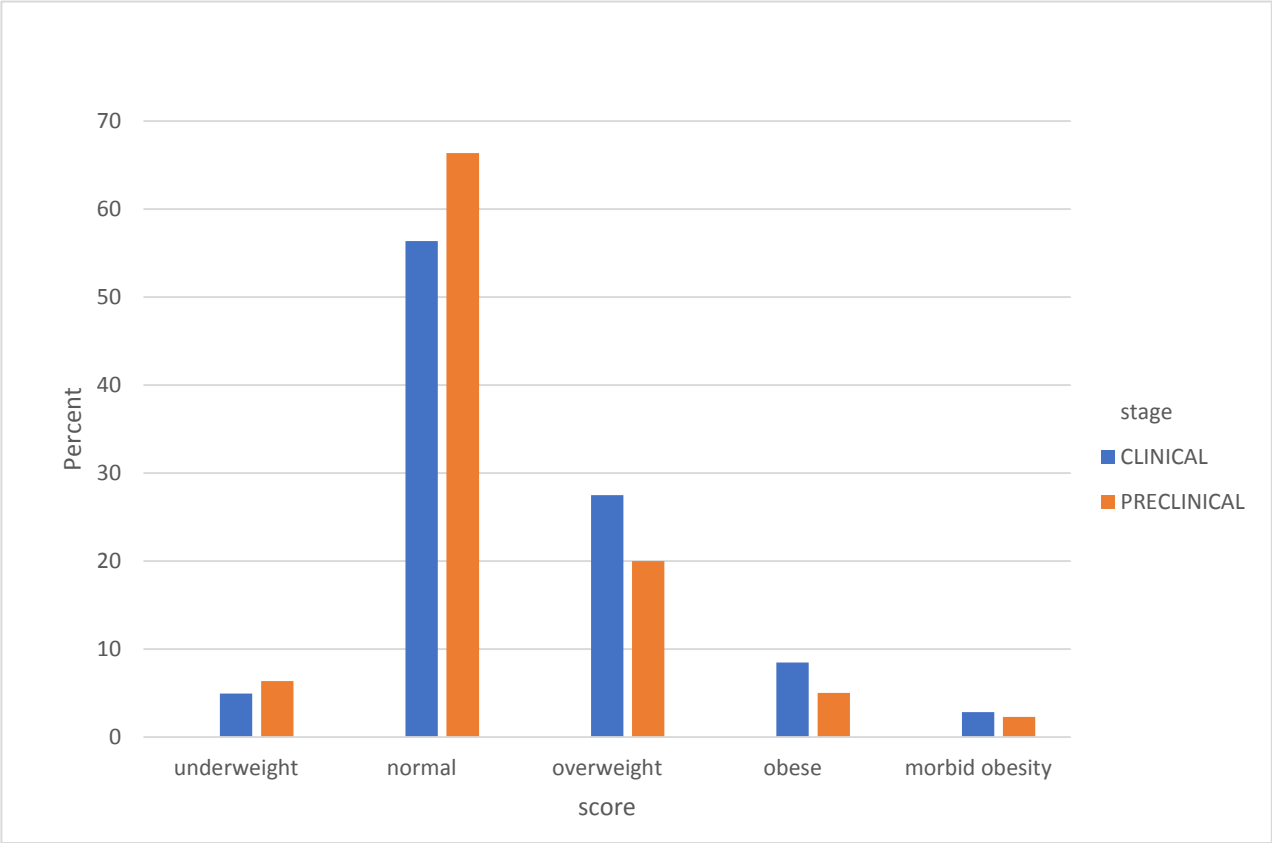

Figure 1. Distribution of study participants according to BMI.

Regarding the preclinical group, more than half of the medical students fell within the “normal weight” category, constituting 66%. A notable portion of the students was classified as “overweight”, comprising 20%. Students classified as “obese” made up 5% of the population and only 2% were in the “morbid obesity” category. A smaller proportion fell into the category of “underweight”, accounting for 6%. Figure 1.

Regarding the clinical group, the result was slightly higher in the “overweight”, ”obese” and “morbid obesity” categories with a percentage of 27%, 8% and 3% respectively. And lower in the “normal weight” category compromising 56% of the population and the lowest is the ”underweight” category with only 5% representation. Figure 1.

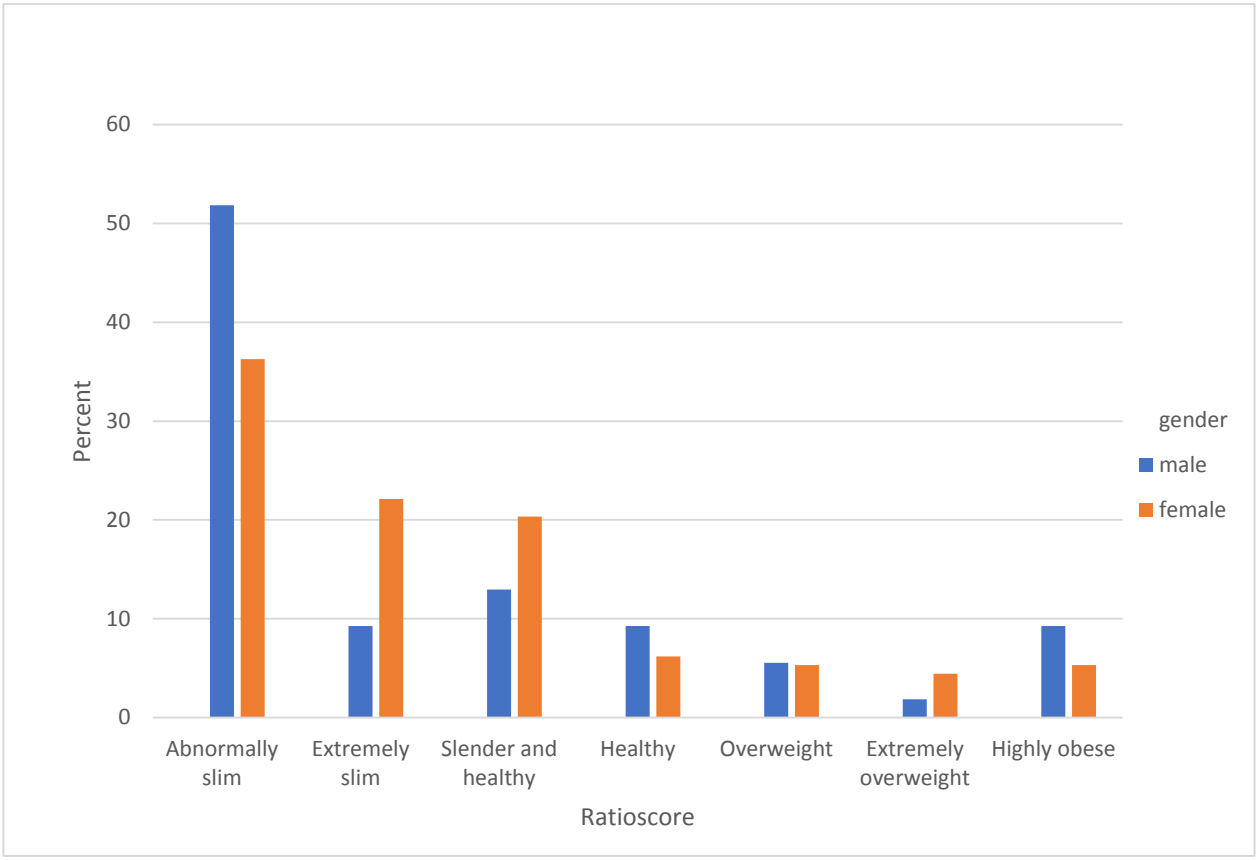

Figure 2. Distribution of preclinical group according to height to weight ratio for each gender.

As for the height-to-weight ratio index on the preclinical group, approximately half of the students fit into the "**abnormally slim**" category (males 51%, females 36%) and decreasing exponentially for the other categories. the "**extremely slim**" category had (males 9%, females 22%) representation and the "**slender and healthy**" category had (males 12%, females 20%). The "**extremely overweight**" had the least representation with only (males 1.8%, females 4.4%) . and the other categories the "**healthy**", "**overweight**", and "**highly obese**" had a representation of (males 9.2%, females 6.1%), (males 5.5%, females 5.3%) and (males 9.2%, females 5.3%) respectfully. **Figure 2.**

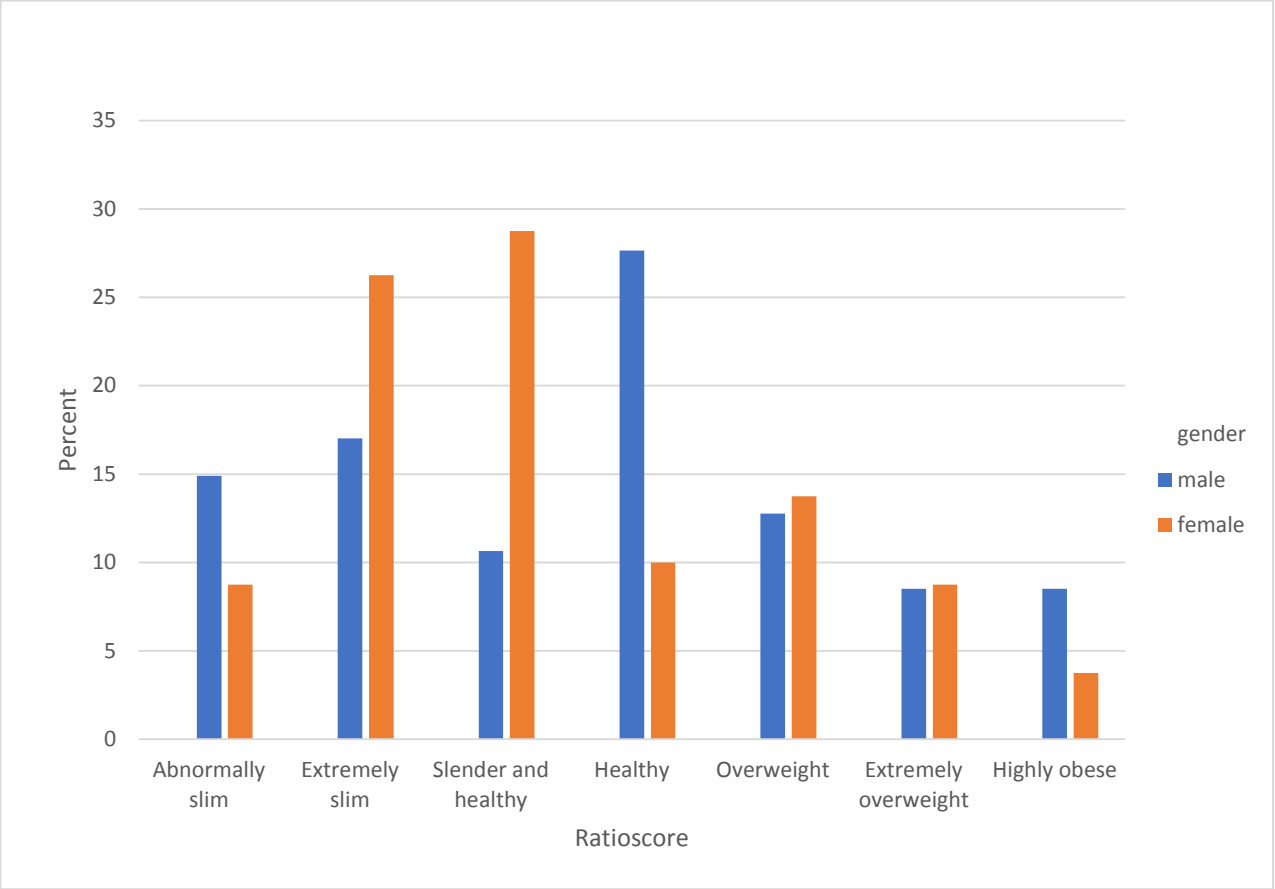

Figure 3 . Distribution of clinical group according to height-to-weight ratio index and gender.

According to the result, there is a generalized increase in weight for most categories as the highest representation of males was in the ”**healthy**” category with 27% however females in the same category were only 10%. the most representation of females was in the “**slender and healthy**” category with 26% and for males in this category was only 10%. There is a huge decrease in clinical cases in the ”**abnormally slim**” category as a result are(males 14.8%, females 8.7%). The “**extremely slim**” has the second most representation for both genders (males 17%, females 26%). And for other categories the “**overweight**”, “**extremely overweight**” and “**highly obese**” there is a remarkable increase compared to the preclinical cases with percentages of (males 12.7%, females 13.7%), (males 8.5%, females 8.7%) and (males 8.5%, females 3.7%) respectfully. **Figure 3.**

Discussion

According to Figure 1, the data shows that the percentage of underweight was slightly increased in the preclinical stages and the majority of students fell into the healthy category indicating that no difference between preclinical and clinical participants but in the overweight category we found that clinical participants was higher in about 7-6% than preclinical participants and the result was similar for the two other categories obese and morbid obesity. There are many factors but One factor may be more important than others which is lifestyle of preclinical participants was less stressful and the students had time to exercise and control their weight better in the clinical stages because of high hours of study, stress, anxiety and fewer hours sleep contributed to many of diseases including sleep disorders and eating unhealthy food, the reason for this is because of cortisol hormone. Cortisol can lead to weight gain While this process is essential for survival situations, it also increases your appetite. Additionally, elevated cortisol levels can cause cravings for sweet, fatty, and salty foods.

Figure 2 shows that the highest majority of males and females in the preclinical group were in Abnormally slim category and the higher percentage of males (51%) than in females (36%) and to a less degree the "**extremely slim**" category had (males 9%, females 22%) representation and the "**slender and healthy**" category had (males 12%, females 20%) . and the other categories the "**healthy**", "**overweight**", "**highly obese**" had a representation of (males 9.2%, females 6.1%), (males 5.5%, females 5.3%) and (males 9.2%, females 5.3%) respectfully. This result may be because of many different factors the Sixth preparatory school being the most common cause for this result as the Sixth school is the end stage of school and determines the path and future of every student, so they have to read long hours +8 hours a day to achieve the highest grade possible especially those who want to enter medical college adding to that the pressure of their parents, friend and society, Other factors like walking while studying and missing meals or eating less food to have more time to study, however in **Figure 3** the clinical group this has changed and the students were able to regain their weight yet there is a a lot of remaining student in the slim and slender category. there is a marked difference between males and females among the healthy group as the highest representation of males with 27% however females in the same category were only 10%, This particular result wasn't surprising because the males are more likely to spend time outside and go to the gym whereas females spend most of the time inside doors this problem is attributed to social discomfort and this resulted in more females being underweight. the highest representation of females was in the "**slender and healthy**" category with 26% and for males in this category was only 10%. There is a huge decrease in clinical cases in the "**abnormally slim**" category as a result (males 14.8%, females 8.7%). The "**extremely slim**" has the second most representation for both genders (males 17%, females 26%).

For other categories the "**overweight**", "**extremely overweight**" and "**highly obese**" there is a remarkable increase compared to the preclinical cases with percentages of (males 12.7%, females 13.7%), (males 8.5%, females 8.7%) and (males 8.5%, females 3.7%) respectfully, this increase in the percentage maybe contributed to eating outside food, stress, and less physical activity.

Obesity is a very important risk factor for several comorbidities, [24] it is very important to take necessary precautions to prevent and control it. The present study concluded that the prevalence of overweight and obesity among medical students is very high compared to the general population, mainly due to their erratic eating habits[25] and stress. Many of the students were overweight or obese. This study could create awareness among medical students to adopt a healthy lifestyle. There is also an increased psychosocial impact on these students due to obesity or underweight.

CONCLUSION

Based on the data presented in Figures 1, 2, and 3, it's evident that there are significant differences in weight categories between preclinical and clinical participants. Preclinical students generally maintained healthier weights, while clinical students experienced higher rates of overweight and obesity. Factors such as lifestyle changes, academic stress, and dietary habits likely contributed to these variations. Notably, males tended to have higher representations in healthier weight categories, possibly due to more outdoor activities, while females faced social pressures leading to higher rates of being underweight. The transition from preclinical to clinical stages saw shifts in weight distributions, with some improvements but also concerning increases in overweight and obesity rates, possibly due to changes in lifestyle and increased stress levels. These findings emphasize the importance of addressing holistic health strategies, including stress management and healthy eating habits, among medical students to promote overall well-being throughout their education.

LIMITATIONS OF THE STUDY

its reliance on self-reported data for weight and lifestyle factors, which may introduce bias and inaccuracies. Additionally, the study's cross-sectional design limits its ability to assess changes in weight status over time accurately.

FURTHER RECOMMENDATIONS

In the future, further evaluation such as lipid profile, glucose intolerance, and hypertension can also be studied.

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