ORIGINAL ARTICLE

Factors associated with junk food consumption among urban school students in Kathmandu District of Nepal

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Abstract

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People's lifestyle turns toward unhealthy dietary pattern as high availability of junk food products. Although consumption of junk food is one of the problem of non-communicable disease, the research on junk food consumption in Nepal particularly among teenage students has not well documented. The adverse effects of junk food on teenage physical and psychological health are both evident. Therefore, factors associated with junk food consumption among teenage students with grade 6, 7 and 8 in urban schools were investigated in this study.

The data collection for this cross-sectional analytical study was conducted during March to April 2018. A sample of 440 students aged 10-18 years with grade 6, 7, and 8 were randomly drawn from 22 selected public and private schools. Students were selected using two-stage cluster random sampling using inclusion and exclusion criteria. Data were collected through face-to-face interview with in school premise using structured questionnaire. Chi-square test and multiple logistic regression were used to determine the association between independent variables and junk food consumption.

The result showed that the 11.8% was at a high level of the junk food consumption and 88.2% was at a low level with the cutoff point of 85th Percentile (P 85). A total 6 variables were significantly associated in Chi-square test. In multiple logistic regression, after adjusting for other factors, 3 variables were significantly associated with junk food consumption: high daily allowance/pocket money of students (Adj OR=2.51, 95% CI=1.36-4.63), high influence to have junk food from parents. (Adj OR=2.69,95% CI=1.46-4.96) and high influence from friends (Adj OR=3.12, 95% CI=1.40-6.93).

In conclusion, schools and home environments are major influencing factors for student's junk food consumption. Therefore, parents and school authority should cooperate to implement health promotion programs and campaigns to reduce of junk food consumption among school-age children.

Keywords: urban school students, junk food consumption, Nepal

ปัจจัยที่มีผลต่อการบริโภคอาหารขยะของกลุ่มนักเรียนเขตเมือง ในอำเภอกาฐมาณฑุ ประเทศเนปาล

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บทคัดย่อ

ภาณุ โพลเดล ศริยามน ติรพัฒน์ และโซอะ หงษ์ ปัจจัยที่มีผลต่อการบริโภคอาหารขยะของกลุ่มนักเรียนเขตเมือง ในอำเภอกาฐมาณฑุ ประเทศเนปาล ว. สาธารณสุขและการพัฒนา 2561;16(2):59-72

วิถีชีวิตของผู้คนเปลี่ยนไปบริโภคอาหารที่ไม่เป็นประโยชน์จากการที่มีปริมาณอาหารขยะที่หาได้อย่างสะดวก แม้ว่าการบริโภคอาหารขยะเป็นสาเหตุของโรคไม่ติดต่อ การวิจัยเรื่องการบริโภคอาหารขยะในประเทศเนปาล โดยเฉพาะในกลุ่มเด็กวัยรุ่นยังไม่มีหลักฐานเชิงประจักษ์ ผลกระทบด้านลบของอาหารขยะที่ต่อกลุ่มวัยรุ่นทั้งสุขภาพทางกายและจิตใจมีหลักฐานแสดงอย่างเด่นชัด ดังนั้นการศึกษาครั้งนี้มีวัตถุประสงค์เพื่อศึกษาปัจจัยที่เกี่ยวข้องกับการบริโภคอาหารขยะในกลุ่มนักเรียนวัยรุ่นที่ศึกษาในเกรด 6, 7 และ 8 ในโรงเรียนในเขตเมืองกาฐมาณฑุ ประเทศเนปาล

การศึกษาวิเคราะห์ภาคตัดขวาง ได้ดำเนินการเก็บรวบรวมระหว่างเดือนมีนาคมถึงเมษายน พ.ศ. 2561 โดยมีตัวอย่างจากโรงเรียนภาครัฐและเอกชนจำนวน 22 โรงเรียน ซึ่งกลุ่มตัวอย่างเป็น นักเรียนเกรด 6, 7, และ 8 ในเขตกาฐมาณฑุจำนวน 440 คน กลุ่มตัวอย่างได้รับการคัดเลือกโดยใช้การสุ่มตัวอย่างแบบแบ่งกลุ่มชนิดสองขั้นตอน ตามเกณฑ์การคัดเลือกที่ได้ระบุไว้ เก็บข้อมูลโดยการสัมภาษณ์แบบตัวต่อตัวในโรงเรียนที่ได้รับเลือกให้เป็นตัวแทนโดยใช้แบบสอบถามที่มาตราฐาน การหาค่าความสัมพันธ์ระหว่างตัวแปรอิสระกับการบริโภคอาหารขยะใช้การวิเคราะห์ไคสแควร์และการถดถอยโลจิสติกพหุคูณ

ผลการวิจัยพบว่าการบริโภคอาหารขยะของนักเรียนมีระดับที่สูงคิดเป็นร้อยละ 11.8 และการบริโภคอาหารขยะในระดับที่ต่ำคิดเป็นร้อยละ 88.2 โดยมีจุดตัดของดัชนีชี้วัดที่ เปอร์เซ็นไทล์ที่ 85 การวิเคราะห์ข้อมูลด้วยไคสแควร์พบว่ามีจำนวนตัวแปรทั้งหมด 6 ตัวแปรที่มีความสัมพันธ์กับการบริโภคอาหารขยะอย่างมีนัยสำคัญทางสถิติ หลังจากปรับอิทธิพลของตัวแปรที่ศึกษาด้วยการวิเคราะห์การถดถอยโลจิสติกพหุคูณ พบว่าตัวแปรที่มีความสัมพันธ์กับการบริโภคอาหารขยะ ได้แก่ ค่าอาหารกลางวันที่นักเรียนได้รับประจำวัน (Adj OR = 2.51, 95% CI = 1.36-4.636)อิทธิพลจากบิดามารดา (Adj OR = 2.69, 95% CI = 1.46-4.96) และอิทธิพลจากเพื่อนที่โรงเรียน (Adj OR = 3.12, 95% CI = 1.40-6.93)

กล่าวโดยสรุปก็คือ ปัจจัยสำคัญที่มีผลต่อการบริโภคอาหารขยะของนักเรียนคือสิ่งแวดล้อมที่โรงเรียนและสิ่งแวดล้อมที่บ้าน ดังนั้นผู้ปกครองและผู้บริหารโรงเรียนควรที่จะร่วมมือกันแบบบูรณาการในการสร้างโปรแกรมการส่งเสริมสุขภาพที่มุ่งเน้นการลดการบริโภคอาหารขยะในกลุ่มนักเรียน

คำสำคัญ: นักเรียนเขตเมือง การบริโภคอาหารขยะ ประเทศเนปาล

Introduction

Junk food consumption has been dramatically increasing in both of the developed and under developed countries since past 15 years[1-2]. Junk food normally contribute low micronutrients to the diet, contain large amounts of fat and/or sugar and are high in energy[3-4]. It helps to provide some calories for body, but usual and frequent use of junk food is harmful for human beings[5].Therefore, food like fast food, soft drinks, sweets, salty sweets, and snacks are junk food.

Usually adolescence need more nutrition than other age group due to rapid growth and development of body[6]. Micro nutritional deficiency and over weight is major nutritional problem of adolescent. It happened generally due to the imbalance of food and unhealthy practice of adolescent[7]. Communication and travelling makes broader world smaller. In the past, the eating habit was just for living but nowadays, eating habit and consumption pattern of food are based on preferences, their economic status or economic power, marketing strategies and various kinds of foods accessible[2]. It can be stated that eating pattern of adolescents is influenced by many factors[8].

In Nepal, 24.1 % people are adolescence group, which accounts for around a quarter of total population[9]. One study of Nepal showed that, prevalence of overweight among adolescent student is 12.2%. Prevalence of overweight is getting high comparative to previous study[10]. With the rise in the incidence of obesity and overweight amongst youngsters and adults, the dark side of 'junk food' cannot be overlooked. The statistics of America was recorded sixty million deaths every year due to obesity or overweight[11].

One previous studies, which followed, PRECEDE PROCECD model revealed that junk food consumption among grade 6 students was associated with encouragement from guardians whereas among grade 9 students, factors that associated with junk food consumption, included encouragement from friends and recognition of the importance of marketing promotion strategies[2]. Study among adolescents in Nepal revealed that 15.5% preferred junk food as influenced by TV advertise, 31.7% because of peer influence.[8]

Adolescent can easily change their habit varying by environment so they are called nutritionally vulnerable group. Intake of low nutritional food, push adolescent at high risk of chronic disease and NCD, which can effect long term of health[12]. Due to junk food and food insecurity, children are pushing toward double burden of malnutrition, under nutrition and over nutrition associated with communicable disease, and finally death[13-15].

This study aims to examine Predisposing, Reinforcing and Enabling factors associated with junk food consumption and pattern of consumption regarding fast food, beverage, sweets and salty snacks, among student attending grade 6, 7 and 8 of the urban secondary school in Kathmandu district of Nepal. The results of the study will be analytical evidence-based information concerning eating behaviors of students in urban school of Kathmandu. Finally, the information will notify the authority to set the policy regarding children's' food consumption in urban schools

Methods

Study setting

Target population for the study were grade 6, 7 and 8 students who have been studying in urban lower secondary school of Kathmandu district, Nepal. Kathmandu is located in the province 3 and is the capital city of Nepal. This district has a total population of approximately 1,740,977 among that population around 367,853 were adolescent[9]. Kathmandu district urban school student of grade 6, 7 and 8 who is studying on academic year 2018 AD: 2074 BS. In Kathmandu district, all together there are 751 lower secondary school with total student of around 72078 where 33276 girls and 38802 boys[16]

Study design

A school-based cross-sectional analytical study was carried out during March to July 2018. The sample size (n=440) was calculated using Taro Yamane formula. Total 440 students from 22 sample schools in Kathmandu, Nepal were selected by multistage random sampling. The information regarding factors associated with junk food consumption were investigated using structured questionnaire.

Sampling method

The study was investigated in 22 selected schools of Kathmandu districts and two-stage cluster sampling method had been used for the selection of school. Probability proportionate sampling had used two-stage cluster sampling to select the lower secondary school children in Kathmandu by using size method in 22*20 matrixes. A cluster is defined as lower secondary schools in Kathmandu district. These schools were arranged in alphabetical order as per various municipality in the list. Twenty-two clusters had selected using simple random sampling with probability proportional to size (PPS) method of WHO.

For the selection of clusters using this method, random number was selected by using excel and then the list of 22 schools had selected with the preceding number of random number which was further added to sampling interval and calculated further schools. A list of number of students in each grade was received from selected schools and 20 students from each school were randomly selected from the list provided as study respondents who were present in class during data collection.

Data collection process

Data were collected by five trained data collectors who have had experience as fieldwork. The data collection procedure was done after pretest. The data was collected outside the classroom within the school premise individually by face-to-face interview. Ethical approval was obtained from the Mahidol university ethical committee (Certificate of approval number: 2018/035.2002). Approval from the district education office, Kathmandu and sample school was taken in order to get permission for data collection as well as cooperation. Students were approached one-day prior data collection where they were explained about the objective, benefit and impending hazard of the study. In addition, consent form for guardian were given to the student to get the consent. On data collection, the consent form of the student as well as their guardian was obtained from students. The participation of respondents was strictly voluntary and confidential. The respondents were free to decide for participation

and quit at any time during study time. The question-naire was translated into the local language, Nepali. Pretest was done by interviewing 30 students in different school to check its acceptability, validity, and reliability.

Dependent variable

The dependent variable, junk food items were categories into 4 types, sweets (candies, chocolate, cookies, biscuits, cakes,lalmohan, rasbari) sweet beverages (soda/soft drinks/redbull), fastfoods (hotdog/hamburgers/cheeseburgers/friedchicken/pizza/suses),and saltysnacks (Chips/cheese/Chan chatpatey/curls/popcorn/potatochips/pringels/Kurkure/Lays). This type of consumed snacks was asked with students using the criteria as Never or rarely,1-2 times per week, 3-4 times per week, 5-6 times per week, 1 time per day and 2 times or more per day. Scoring with 0, 1, 2, 3, 4 and 5 respectively[17]. The consumption level was determined by asking the students the frequency did you eat the above 4 kinds of snack[18]. After asking total sum of junk food consumption was computed with maximum 20 and minimum 0. To determine the level of junk foods (fast food, sweets, sweets beverage, salty snacks), the total score of all items was summed, and the cut off point for low or high consumption is 85th percentile (P 85) indicating[8]. The total score below or equal 8 was categorized as low junk food consumption and the score more than 8 was categories into high level junk food consumption. The reliability of consumption level of junk food questions was estimated using Cronbach alpha (α). The reliability was high (α =0.71)

Independent variables

The question had three parts including predis-posing, enabling and reinforcing factors. The structured questionnaire in accordance to the literature reviews and following standard questioner. Knowledge of junk food among students were measured with ten questions. For each question, they have 4 multiple choices with score of true or false. The true answer is score of one whereas the wrong answer is score of zero. Then, total sum was compute, whereas 8-10 (80-100%) were in excellent of knowledge, 7-7.9 (70-79%) were in very good knowledge, 6-6.9 (60-68%) were in good knowledge, 5-5.9 (50-59%) were in moderate knowledge, and 0-4.9 (<50%) were in low level of knowledge[2]. After that knowledge level were categories in poor and good level of knowledge with cutoff point at 50%. Using KR-20, the reliability coefficient of the knowledge questions was 0.72 which was high. In term of student attitude on junk food consumption, there were 15 questions to measure the attitude of student and food consumption pattern. In total 15 questions, 14 were negative and 1 was positive questions. In negative questions, the scale composed of extremely disagree to extremely agree score (5-1). In positive questions, the scale is opposite to negative questions with extremely disagree to extremely agree score (1-5). The Likert scale has been used for developing 15 items of Statements, with 5 choices. Both negative and positive questions were compute together. According to median cutoff value, less than and equal to 50 were categories into bad and more than 50 were categories in good attitude[2]. The reliability coefficient of attitude questions was 0.68 using Cronbach alpha test.

Data analysis

Statistical package for social science (SPSS) version 21 was used to address the specific objectives of the research. The questionnaire was labeled and coded by the researcher. Firstly, Descriptive analysis was performed to calculate the results and summarized as frequency, percentage, mean, median, QD, SD, minimum, and maximum of the dependent and independent variables of the study. Bivariate analysis as chi square and simple logistic regression was used to examine relationship between each independent variables and junk food consumption by fixing 95 % confidence interval. Finally, multiple logistic regression using Enter method was used to determine significant predictors of high junk food consumption.

Results

Table 1 shows out of 440 secondary school students, about 88.2% children consumed low level of junk food and 11.8% students consumed higher level of junk food(cut of point=P85) The high level of junk food consumption was 11.8% in total 13.8% for female and 10% for male.

Table 1   Distribution of school students by junk food consumption levels.

Junk food consumption levels	Number	Percent
Low (≤8)	388	88.2
High (>8)	52	11.8
Mean=5.4, SD= 2.85, QD=1.5, Min=0, Max=19		

Table 2 shows the number and percentage of predisposing factors, the same proportion of male and female students were found, 52.3% of male students and 47.7% of female students. The percentage of grades 6,7 and 8 students were 31.8% 33.6% and 34.5% respectively. 80.5% used to watch television and play video game less than 2 hours, which was categories as no sedentary behavior, whereas 19.5% of student used to watch television and play video game more than 2 hours and categorized as having sedentary behavior.

As shows in the Table 2, the majority of students, 80.5% were no sedentary behavior whereas 19.5% student have sedentary behavior. Regarding knowledge of students more than half (65.5%) of them had good knowledge about junk food and its harmful effect whereas the rest for 34.5% had poor knowledge. Regarding attitude 50% half of the student had bad attitude towards junk food consumption, and nearly half (49.8%) had good attitude.

As shows in Table 2, 63% of the respondents had low daily allowance and 37% had high daily allowance. Whereas half (51.8%) had low family income while the rest, (48.2%) had high family income. Regarding the father education, 24.8% were illiterate, 45.2% received informal education and 30% achieved higher level of education. Regarding the mother education 37% mother were illiterate, 38.4% achieved informal

education and 24.5% received higher level of education.

As shown in Table 2, the majority of students as 71.1% had never influence from parents to consume junk food whereas 28.9% had influence. More than half of students 61% were influence by friends for consuming junk food whereas 38.9% were never influence. Half of the students 51% of the students had effect by exposed to advertisement and promotion while 48% had no affect towards junk food consumption.

Table 2   Distribution of urban school students by predisposing, enabling and reinforcing factors.

Predisposing factors	Number	Percent
Gender		
Male	230	52.3
Female	210	47.7
Sedentary behavior		
No	354	80.5
Yes	86	19.5
Knowledge levels		
Good	288	65.5
Poor	152	34.5
Attitude score		
Poor	221	50.2
Good	219	49.8
Median= 50, QD= 4.5, Min=24, Max=71		
Daily allowance		
Low	277	63.0
High	163	37.0
Median= 30, QD= 12.5, Min=0, Max=150		
Family income		
Low	228	51.8
High	212	48.2
Median= 45000, Mean=50023, QD=15000, Min=10000, Max=200000		
Father Education levels		
Illiterate and primary school	109	24.8
Secondary and high school	199	45.2
College and above	132	30.0
Mother education levels		
Illiterate and primary school	163	37.0
Secondary and high school	169	38.4
College and above	108	24.5
Parent influence to have junk food		
No	313	71.1
Yes	127	28.9
Peer influence to have junk food		
Yes	269	61.1
No	171	38.9
Mean=23.10,SD=2.74, QD=2 Min=16, Max=30		
Exposed to mass media and promotion		
Effect	225	51.1
No effect	215	48.9

Table 3 indicates factors associated with Junk food consumption among urban school students by using chi-square and simple logistic regression analysis methods.

As shown in the Table 3, gender of student, knowledge regarding junk food, were dissociated with junk food consumption. Whereas the significantly associated social-demographic factor and pre-disposing factors were sedentary behavior, attitude toward junk food consumption. Regarding the sedentary behavior, students having sedentary behavior were 2.24 times more likely to consume junk food than those students having no sedentary behavior (p-value=0.013). Regarding the attitude towards junk food, student having bad attitude were 2.46 times more likely to consume junk food than those students having good attitude (p-value =0.004).

Table 4 presents Family income, parent's education are not significant for junk food consumption, whereas the significant association of enabling factors were student daily allowance/pocket money. The student daily allowance/pocket money, students with high allowance were 2.86 times more likely to consume junk food than those students with having low daily allowance.

Table 5 presents Encouragement/influence from parents, encouragement/influence from friends and exposed to mass media and promotion are significantly associated reinforcing factors. Regarding the encouragement/influence from parents, students with parents influence were 3.11 times more likely to consume junk food than those students without parents influence with the significant p value as 0.001. Similarly, the encouragement/influence from friends, students with the influence were 3.98 times more likely to consume junk food than those having no influence.

The students exposed to mass media and promotion, they were 2.15 times more likely to consume high level of junk food than those did not.

In multiple logistic regression analysis, three variables were significant to predict for higher junk food consumption (Table 6). Student with high daily allowance were 2.51 times more likely to consume high junk food than students having low daily allowance were (95% CI, 1.36-4.63). Students with parents influence were 2.69 times more likely to consume high junk food than student no influence from parents (95%CI, 1.46-4.96). Similarly, the students with encourage/influence from friends were 3.12 times more likely to consume high junk food than students no influence from friends (95% CI, 1.40-6.93).

Table 3   Association between predisposing factors and junk food consumption

Predisposing factors	n	Junk food consumption		Crude OR (95 % CI)	P-value
		High %	Low %		
Gender					
Male	230	10.0	90.0	1	
Female	210	13.8	86.2	1.44 (0.80-2.58)	0.218
Sedentary behavior					
No	354	9.9	90.1	1	
Yes	86	19.8	80.2	2.24 (1.19-4.23)	**0.013***
Knowledge about junk food					
Good	288	10.1	89.9	1	
Poor	152	15.1	84.9	1.59 (0.88-2.86)	0.120
Attitude toward junk food consumption					
Poor	221	16.3	83.7	2.46(1.32-4.59)	**0.004***
Good	219	7.3	92.7	1	

Table 4   Association between the enabling factors and junk food consumption

Enabling factors	n	Junk food consumption		Crude OR (95 % CI)	P-value
		High %	Low %		
Student daily allowance					
Low	277	7.6	92.4	1	**0.001***
High	163	19.0	81.0	2.86 (1.58-5.17)	
Family Income					
Low	228	12.3	87.7	1.09 (0.61-1.96)	0.755
High	212	11.3	88.7	1	
Father education levels					
Illiterate primary school	109	10.1	89.9	1	
Secondary and high school	199	12.6	87.4	1.28 (0.6-2.71)	0.620
Collage and above	132	12.1	87.9	1.22 (0.54-2.77)	0.905
Mother education levels					
Illiterate and primary school	163	9.2	90.8	1	
Secondary and high school	169	15.4	84.6	1.79 (0.91-3.53)	0.182
Collage and above	108	10.2	89.8	1.12 (0.49-2.538)	0.218

Table 5   Association between the reinforcing factors and junk food consumption.

Reinforcing factors	n	Junk food consumption		Crude OR (95 % CI)	P-value
		High %	Low %		
Influence from guardians to have junk food					
No	313	8.0	92.0	1	
Yes	127	21.3	78.7	3.11(1.72-5.61)	**0.001***
Peer Influence to have junk food					
Yes	269	16.4	83.6	3.98(1.82-8.69)	**0.001***
No	171	4.7	95.3	1	
Exposed to mass media and promotion					
Affect	225	15.6	84.4	2.14(1.16-3.95)	**0.013***
No affect	215	7.9	92.1	1	

Table 6   Multiple logistic regression of predictors for higher junk food consumption

Factors		Adj OR 95 % C.I. for OR			P-value
Student daily allowance	Low	1			
	High	2.51	1.36	4.636	**0.003***
Parent influence to have junk food	No	1			
	Yes	2.69	1.46	4.96	**0.001***
Peer influence to have junk food	No	1			
	Yes	3.12	1.41	6.93	**0.005***

CI = Confident interval, Adj OR = Adjusted Odd Ratio

Discussion

The school-based cross-sectional study examined predisposing, enabling and reinforcing factors that were associated with the Junk food consumption among urban secondary school grade 6, 7 and 8 student of Kathmandu, Nepal. This study showed out of total 440 students, 388 (88.2%) had a low level of junk food consumption, while 52 (11.8%) had high level of junk food consumption.

The finding of this study showed that students obtaining high pocket money were more likely to consume higher junk food than who obtaining low pocket money. The finding was similar to a previous research among adolescent students which mentioned that students who got more pocket money had power of buying junk food and also have more options of choosing food than who received less amount of money at time of school with 50% of pocket money will spend to buy junk/fast food[19].

The students influenced by parents were more likely to consume higher junk food than the students with no influence by parents. A previous research explained that easily accessibility and availability of junk food in home environment provided by parents is strongly associated with pattern of consuming behavior[20]. The same line with other study, a recent study claimed that the pressure such as unhealthy snacks consumption by peers and family members inspired higher consumption of unhealthy Junk food[21]. These basic findings are directly in line with previous findings, the researches stressed that parent consumption pattern affect junk food consumption on children[20, 22, 23]. With these circumstances, parent and guardians of the students should play a good role model, mainly to students who are more eager to learn and follow other behavior[24-28].

Apart from parent's influence, our study showed that students were influenced by peer. Student with peer's influence were more likely to consume high junk food than student without peer's influence. It was similar result from previous studies, negative influence on healthy eating behaviors of students, may contribute unhealthy food/ junk food consumption among children[29-30]. In a study of Costa Rican adolescents, peer influence was shown to significantly influence intake of foods filling with saturated fats31. One reason was friends were very influential their behaviors may be that, during adolescence, children usually identify themselves with their peer group, and they need to accept by their friends[32]. Another reason was that most of this school -aged students spend their time with peer, and they follow the way what their friend influence[33].

Recommendations

The study shows that 88.2% of children consumed low level of junk food, whereas 11.8% students consumed high level of junk food. The present study can conclude that social environmental factors are major influencing factors for student's junk food consumption habit. The predictive factors of junk food consumption included influence from parents and friends also student daily allowance. Therefore, the parents and school authority should be aware of daily allowance that children use for buying junk foods. In addition, parents, as well as, students need to be educated regarding the negative effects of junk foods to be a good model. Parents should be a role

model by eating healthy foods and improve home food to against fast food consumption. This would minimize lifestyle disorders among children largely. Furthermore, school authority should implement health promotion programs and campaigns to against health hazards of fast foods consumption that eventually decrease its burden.

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