

Breakfast meal characteristics, reasons of skipping and perception among 8th and 9th grade students at governmental schools, Jenin governance, West Bank

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Abstract

Background

There is growing recognition of the important role of breakfast in children's nutrition, and the potential harms related to skipping breakfast, including contributing to obesity and non-communicable diseases. The patterns associated with skipping breakfast may be related to the nutrition transition. This study aims to explore the prevalence of skipping breakfast among Palestinian schoolchildren, the sociodemographic and behavioural patterns associated with skipping breakfast, and the reasons and perceptions around it, in addition to the composition of breakfast consumed.

Methods

We undertook a cross-sectional online questionnaire of 12- to 14-year-old schoolchildren from 4 governmental schools in urban and rural areas of the Jenin district of Palestine, collecting information about children's and parents' characteristics and behaviours, breakfast patterns and composition, reasons for skipping breakfast, and perceptions around breakfast. Statistical analysis of the relevant factors was undertaken using SPSS software.

Results

In a sample of 193 schoolchildren, only 32% reported consuming breakfast all-year round. The main reasons reported for skipping breakfast were not feeling hungry, not having the time, and lack of appetite. The vast majority (79%) believed breakfast was beneficial for general health. Sleeping before 10pm, regular exercise, and shorter screen time were all associated with a higher level of breakfast consumption.

Conclusion

Understanding the reasons for missing breakfast, and the factors which make skipping it more likely, should inform public health strategies to promote breakfast consumption. For example, our findings suggest that awareness of the importance of breakfast was not a significant contributor to skipping breakfast, compared to other structural and cultural factors.

Introduction

A lot has been researched, written and published about the nutritional transition in Low and Middle Income settings [1]. This transition includes physical activity shifting towards more sedentary lifestyles, and changing dietary habits. In Palestine, such new dietary habits include an increased consumption of saturated fats, reduced fruit and vegetable intake, and reduced fibre intake. They also include an increasing prevalence of skipping breakfast [2]. This transition has been shown to be a significant risk factor for increased non-communicable diseases. Studies show that individuals who skip breakfast are at increased risk of high BMI and diabetes [3, 4], which are already at high and increasing rates in Palestine [5, 6]. Globally, skipping breakfast is highest among adolescents, who are consequently at risk of poorer academic performance and physical growth [7]. This makes this issue vitally important in the Palestinian context where one-quarter of the population is made up of adolescents [8].

The most recent comprehensive study studying health behaviours among adolescents was conducted as part of WHO's Health Behaviour in School-age Children (HBSC) study in 2004 [9]. The study used a cross-sectional survey to investigate health behaviours among adolescents in 35 countries including the West Bank and Gaza Strip in Palestine. The survey identified several health concerns, including that 45% of adolescents did not consume breakfast, as well as its link to other health behaviours. Several studies since then have considered breakfast consumption among adolescents with similar findings to the HBSC study, in 2009 and 2010 in Palestine, and many other studies in other Arab countries [10–12]. None of these studies, including the HBSC study, considered the underlying reasons for skipping breakfast or people's perceptions of it in Palestine.

There are significant and justified concerns about the rising rates of NCDs and obesity in Palestine. Addressing their risk factors necessitates understanding the causes and perceptions of health behaviours which interventions seek to promote [13]. In the case of skipping breakfast, for example, we have a good understanding of the rates of the concerning issue, but not of its causes, and of people's perceptions around breakfast. Any interventions seeking to promote breakfast as a positive health behaviour therefore need a deeper understanding to facilitate their success.

The aim of this study is therefore to study breakfast consumption in a representative sample of children aged 12–14 years. The objectives are first to understand the associations of skipping breakfast with age, gender, parental education level, and sleeping time, as potential determinants of skipping breakfast. Second, to establish the reasons for skipping breakfast and perceptions towards breakfast meal consumption. Third, to investigate breakfast characteristics in association with the previous objectives.

The Methodology And Study Instruments

Study design

This study used a cross-sectional design to determine the prevalence of breakfast meal eating and skipping, breakfast characteristics, reasons of breakfast skipping and students' perception toward breakfast meal consumption. The participants were grades eight and nine students selected from four governmental schools in Jenin District in West Bank. The four schools included two girls' and two boys' schools, randomly selected from urban and rural areas. A formal letter was sent to the Ministry of Health to take the permission for the data collection from the selected schools.

The Palestinian Ministry of Education approved the study protocol once it had been reviewed by the Research and Quality Control committee.

The study protocol was also approved by the Institution Review Board (IRB) ethical committee at An-Najah National University.

Having got the approval, an invitation letter was sent to the selected schools through the Directorate of Education-Jenin office.

As the participant's age is less than 18 years old, the consent of participation was taken first from the school principals then from the parents through the school teachers, informed consent was obtained from all the parents before the data collection.

The online questionnaire was distributed to the students through their teachers in the selected schools after the teachers got the parents' agreement.

All students were informed that their participation was not compulsory and the data would be used only for research purposes.

They were informed to answer the questions individually.

Sample size and sampling procedures.

The sample size was calculated using (Cochran 1963) formula for prevalence studies. Prevalence of breakfast skipping was taken from previous similar study conducted by Al-Hazzaa et al. (2020) [12] to determine the prevalence of breakfast eating among Saudi schools students. They found that prevalence of breakfast eating was 15 %. $n = (Z \alpha/2)^2 p (1 - p) / \Delta^2$, Δ Assumed to be 5%. The calculated Sample size = 195, considering 5% drop out.

The required sample size was 204 rounded 205 participants.

The inclusion criteria were: all students who are in grades 8th and 9th from Jenin governmental schools in Jenin, are willing to participate and have answered the online questionnaire. The students who did not answer the primary questions - questions related to breakfast, reasons of skipping and perceptions to breakfast- were excluded from the final data analysis.

Research Instrument

The questionnaire was developed based on a thorough literature review pertaining to breakfast meal eating among school students from different age groups. Two specialists in nutrition prepared the initial questionnaire items using the participants' native language (i.e. Arabic). Content validity was examined by five (5) experts in nutrition and three (3) in assessment and research methods. Few items were amended based on the experts' comments and suggestions. Other items were deleted and replaced with new ones to ensure that all items measure the investigated constructs accurately. The revised questionnaire was sent for Arabic language editing before it was distributed. The final version of questionnaire included 3 items about breakfast eating in school days, holidays and eating meal at school, two open end questions about the food consumed in the breakfast meal and school meal. Eight dichotomous items of reasons of breakfasts skipping (answers yes or no). Seven items about breakfast meal perception three level Likert scale answers; agree, no opinion and disagree. The reliability test was done using Chronbach alpha test for each section separately. The reliability for the reasons of breakfast skipping section was 0.81, for perception 0.59 for the seven items; then the reliability was improved by deleting item no 7, so the reliability for the 6 items was 0.68.

Data collection

Data collection started in October 2020 and ended in November 2020. The final version of the online questionnaire consisted of three sections: section one was socio demographic characteristics of the students including gender, area of living, family type, number of family members, parents' education, parents' work status and pocket money. The second section was the medical history and lifestyle and presence of chronic diseases. The life style variables included sleeping hours, sleeping time, wake up time, methods of going to school (walking or using transport), going for exercise and screen time. The third section was the breakfast related data: eating breakfast during school and holiday days in addition to eating meals at schools, types of consumed food in breakfast and school meals, reasons of breakfast skipping and students' perception regarding the breakfast meal.

Statistical Analysis

The Statistical package for the social Sciences SPSS, version 21 was used to analyze the collected data. Descriptive analysis including the means and the standard deviations were used to analyze data pertained to continuous dependent and independent variables. The categorical data were described by percentages. Independent t-test and ANOVA tests were conducted to examine the differences between selected independent variables while Chi Square test was employed to examine the association between the categorical variables and the nominal levels, with significance level 0.05.

The Results

Characteristics of the participants

A total of 1250 students from grades 8th and 9th from 4 different school were invited to fill in the online questionnaire. Only 203 students responded to the invitation and gave the required data, with 16 % responding rate. Ten (10) students were excluded due to missing data; and only 193 students were included in the final analysis.

Table 1 showed the participants' characteristics presented in numbers and percentages. The majority of the sample are girls (70.5%), eighth grade (57%), and live in nuclear family (88.1%). The mean of the number of family members is 6.8 ± 1.6 , ranged from 3 to 15 members.

The means of pocket money as reported by the participants is 5.4 ± 3.2 , ranged from 0–20 NIS/ day. In regard to life style, (83.7%) of the students walk to school every day and only (19.3%) go for exercise regularly. The mean of screen time is 4.4 ± 2.8 , ranged from 0–12 hours/day. The mean of sleeping hours is 8.1 ± 1.4 , ranged from 4–12 hour/day

Table 1
Participants' sociodemographics, medical history and lifestyle characteristics presented in n
(%)

Socio demographic		n	%
Gender	Boys	57	29.5
	Girl	136	70.5
School location	City	103	53.4
	Village	90	46.6
Grade	8th	110	57
	9th	83	43
Family type	Nuclear family	170	88.1
	Extended family	23	11.9
Parents education	Both parents have primary education	20	10.4
	Both parents have secondary education	31	16.1
	Both parents have university degree	40	20.7
	Mixed-level; primary /secondary	34	17.6
	Mixed-level; primary /university degree	43	22.3
	Mixed-level; secondary /university degree	25	13
Parents working status	Both parents are not working	5	2.6
	Both parents are working	47	24.4
	One of parents work	140	72.5
Medical history			
Presence of Chronic diseases	Yes	19	9.8
	No	174	90.2
History of surgical operation	Yes	8	4.1
	No	185	95.9
Life style Data			
Go to school	Walking	159	83.7
	Using transports (public or private)	31	16.3
Go for exercise (home, outside)	Yes regularly	37	19.3
	Yes, irregular	109	56.8
	No	46	24
Wake up time	Before 6:00 am	24	12.9

Socio demographic		n	%
	6:00–7:00 am	98	52.7
	After 7:00	47	25.3
Sleep time	Before 9:00 pm	21	11.4
	9:00–10:00 pm	70	37.8
	10:00–11:00 pm	36	19.5
	After 11:00 pm	58	31.4

Prevalence of Breakfast Eating and Meal Characteristics

Figure 1 shows the prevalence of breakfast eating in school days, holidays and all days.

Most of participants reported that they eat their breakfast in holidays (62.2%) as compared to school days (37.3), and (32.1%) in all the days.

While the prevalence of meal skipping was higher in school days as compared to holidays. In regard to taking meals to school, 80.3% of the students said they take meal to school every day, while the rest said they do not take meals to school.

Table 2 shows the breakfast meal and school meal components. Sandwiches are the most consumed type of meals in both breakfast and school meals.

Breakfast is mostly prepared by the parents; and students eat their breakfast with their siblings (41.1%), and with their whole family (34.4%).

Table 2
Breakfast meal and school meal Characteristics

Breakfast characteristics (school days)			
		n	%
Type of food	Sandwich (cheese, labaneh, Zaater)	80	53
	Milk + cookeies (cake + biscuits)	17	11.3
	Tea + cookies (cake + biscuits)	10	6.6
	Milk + cereals	12	7.9
	Traditional breakfast	32	21.2
Eating company	Alone	37	24.5
	With siblings	62	41.1
	With family	52	34.4
Breakfast preparation	Parents / mothers	113	74.8
	Ready food from outside the house	6	4.0
	I prepare it myself	28	18.5
	Brothers or sisters	4	2.6
School meal characteristics			
		n	%
Type of food	Sandwich	89	74.7
	Sandwich + fruits	5	4.2
	Sandwich and juices	9	7.6
	Cake or cookies, chips	6	5
	Fruits only	3	2.5
	Sandwich + cookies or chocolate or cake	7	5.9

Reasons of Breakfast Skipping

Table 3 shows the reasons of breakfast skipping as reported by 129 students who always or sometimes skip breakfast.

The most common reason of breakfast skipping is 'they don't feel hungry in the morning' followed by 'they have no time to eat' and 'they don't like to eat early', while the reasons 'they don't like the food' and they want to lose weight' are the least common ones .

Table 3
Reasons for breakfast meal skipping

Reasons	Answers	n	%
I don't feel hungry	Yes	77	59.7
	No	52	40.3
No time to have breakfast	Yes	65	50.4
	No	64	49.6
I don't like to eat early	Yes	63	48.8
	No	66	51.2
I feel uncomfortable when I eat	Yes	42	32.6
	No	87	67.4
I don't find ready food to eat	Yes	25	19.4
	No	104	80.6
I need to lose weight	Yes	20	15.5
	No	109	84.5
My family skip the breakfast and so I do	Yes	30	23.3
	No	99	76.7
I don't like the food choices	Yes	19	14.7
	No	110	85.3

Perception toward Breakfast Meal

As shown in Table 4, students reported different perception about breakfast meal. The majority agree that eating breakfast is very important to general health (79.3%) and for good cognitive performance (81.3%). Concerning the negative perception, toward breakfast consumption, 64% disagree that breakfast increase weight 64.2%, (69.9%) disagree that breakfast lead to gastrointestinal disturbances, similarly 81.3% disagree that breakfast eating makes them feel lazy and less energetic. Overall, students have shown good or positive perception toward breakfast consumption.

Table 4
Students positive and negative perception toward breakfast meal eating

Perceptions		n	%
I believe eating breakfast is very important to general health	Agree	153	79.3
	No opinion	20	10.4
	Disagree	20	10.4
I believe eating breakfast increase the concentration and memorization during the classes	Agree	157	81.3
	No opinion	19	9.8
	Disagree	17	8.8
I believe eating breakfast increase the weight	Agree	25	13.0
	No opinion	44	22.8
	Disagree	124	64.2
I believe eating breakfast may leads to gastrointestinal disturbances	Agree	13	6.7
	No opinion	45	23.3
	Disagree	135	69.9
I believe eating breakfast make me feel lazy and less energetic	Agree	19	9.8
	No opinion	17	8.8
	Disagree	157	81.3
I believe I can make up the breakfast with other meals during the day without any difference on health	Agree	57	29.5
	No opinion	33	17.1
	Disagree	103	53.4

Eating Breakfast and Associated Factors (socio-demographic and life style)

The results reveals that there is no association between eating breakfast either in general, schooldays or in holidays with gender, grade, types of family, parents' education and parents' work status using chi square test. However, eating breakfast every days is associated with living in the cities; and never eating breakfast is associated with living in villages, $p < 0.05$ using Chi Square test. Moreover, the relationships between eating breakfast with number of family members and the amount of pocket money are not significant using one way ANOVA test. In regard to life style factors, early sleeping i.e. before 10:00pm is significantly associated with higher prevalence of eating breakfast, $p < 0.05$, using Chi Square test. Similarly, significant association is found between going for exercise (regular, irregular) with higher prevalence of eating breakfast every day, $p < 0.05$, using Chi Square test; whereas the other life style variables (walking to school, waking up early) showed non-significant association with eating breakfast. For

continuous variables in the life style (hours of night sleeping and hours of screen time), The results shows significant relationship between eating breakfast and screen time; students who eat breakfast every day reported shorter screen time (3.3 ± 2.3) hours/ day, students who sometimes eat breakfast (4.66 ± 3.1) hours compared to who always skip breakfast (5.4 ± 2.7) hours/ day, $p < 0.01$ using one way ANOVA test. Similar trend is shown for hours of night sleep; students who skip their breakfast reported shorter night sleep (7.2 ± 2) compared to students who always or sometimes eat breakfast with (8.1 ± 1.1 and 8.1 ± 1.3) respectively. But these differences are not significant, $p > 0.05$ using one way ANOVA test.

Breakfast skipping reasons and associated factors

The results reveals that there is association between female gender and the eight reasons of breakfast skipping, $p > 0.05$ using Chi Square test. The same finding is found with school location, grade, students living area and family type. For parents' education, there is a significant association between item No. 5 (I don't find ready food to eat) with lower parents education level, $p < 0.05$ using chi square test. In regard to parents working status, significant association was found with item no.

5 of breakfast skipping (I don't find ready food to eat) with both parents are not working.

Likewise item no.7 (My family skip the breakfast and so I do), it is associated with both parents are not working $p < 0.01$ using Chi square test.

Perceptions toward Breakfast and Associated factors

No significant relationship between students' perceptions and any of the socio demographic variables: gender, school locations, parents' education or parents' working status, $p > 0.05$.

Discussion

Our findings indicate that only 32% of children consume breakfast daily all-year round, and 62% consume breakfast daily during holidays. This compares to previous studies with similar samples conducted in Palestine reporting 50% breakfast consumption twice or fewer per week [10], 45% breakfast consumption 4 days-per-week during school term [14], and 62% breakfast consumption [11]. The latest study with a similar sample from neighbouring Jordan reported 80% of children consuming breakfast [15]. In Saudi Arabia, a survey recently reported 79% of children skipped daily breakfast but that there was higher breakfast consumption at weekends compared to weekdays [12]. Our findings indicate a lower proportion of children consuming breakfast in Palestine than neighbouring countries.

Breakfast consumption was not associated with gender, age, parents' education, parents' work status, or pocket money, but was positively associated with living in a village. Breakfast consumption was significantly associated with regular exercise, sleeping before 10pm, and shorter screen time.

Previous studies in the region found different associations. For example, an association between female gender and breakfast consumption has been observed [10, 11, 16]. This association has not been in Saudi Arabia or Jordan, however [12, 15]. A relationship between education and breakfast consumption has also been seen, with a higher parental education level predicting lower breakfast skipping [10, 12], and higher paternal level of education predicting lower breakfast skipping [14]. In 2009, no relationship was seen between rural or urban living with breakfast consumption [11]. The same study also found an association between breakfast consumption and socioeconomic status.

Almost 70% of children had higher than 2 hours screen time per day with a higher proportion among children, and 66% did not sleep the recommended amount, both of which were associated with reduced breakfast consumption [17]. Other studies have found similar associations, with waking up late associated with skipping breakfast [18], and longer sleep associated with decreased breakfast skipping [19].

Previous surveys on a regional level have not studied the relationship between breakfast consumption and exercise. Regular breakfast eating was associated with health-promoting behaviours including exercise [20], and adolescents who skip breakfast are less likely to exercise regularly [21].

Of those consuming breakfast at home, 35% ate sandwiches (white cheese, labaneh, zaatar), 8% ate cereal and milk, and 18% cookies with milk or tea.

40% had breakfast prepared by their parents.

A study conducted in Qatar, surveying a younger age group, found that 90% ate eggs or cheese for breakfast, and 42% sweets and chocolate [22]. In a study in Saudi Arabia, 48% had fried eggs sandwiches, 46% had breakfast cereal, and 41% had spread cheese sandwiches. In the same sample, 80% had breakfast prepared by parents [17]. Only 4–7% consumed more healthy options (such as labaneh or zaatar sandwiches).

Reasons for skipping breakfast

In our sample, the most common reasons given for skipping breakfast were not feeling hungry (60%), not having time (50%), and not enjoying eating early (49%). Other reasons included desired weight loss (15%) and missing breakfast because the family does (23%). There was a statistically significant association between being female and all the aforementioned factors.

Both parents being out of work and lower education level were significantly associated with children reporting not having anything to eat (20%).

These are similar to reasons identified in other studies in Arab countries and globally. In a study in Jordan, the top reasons were poor appetite (65%), not having time (60%), having nothing to eat (60%), and having no one to prepare breakfast (58%) [15]. In Saudi Arabia, 48% reported not feeling hungry and 36% reported not having time [17]. The two most common reasons in an Australian study were not feeling hungry and lack of time [23].

Perceptions on breakfast

There were generally positive perceptions of breakfast among our sample, with 79% believing it is beneficial for general health, 81% agreeing that it increases concentration and memorisation at school, only 13% believing that it contributes to weight gain, and 81% disagreeing that eating breakfast made them lazy and less energetic. Such perceptions have not been studied previously in the Arab world. There have been studies investigating perceptions of breakfast elsewhere in the world, but with very different samples and methodologies.

Implications

Many studies have investigated patterns of breakfast consumption and its associations with various individual and societal factors. This study has delved deeper into the reasons behind skipping breakfast, and children's perceptions of breakfast. This included studying factors which have not previously been investigated in Palestine, such as the relationship of children's breakfast with exercise, sleep, and screen time. These associations are particularly important because they form part of the nutritional transition.

These findings, and their context, have important public health implications. For example, perception of breakfast is generally positive, with a high level of awareness of its importance and role in improving performance at school and health in general. Public health campaigns educating children on the importance of breakfast are therefore unlikely to be valuable. For a small subset of children, particularly girls, perception of weight may on the other hand be an important factor to address. This is particularly important in light of increasing rates of eating disorders in Palestine.

The lack of association between breakfast consumption and parents' work status was a surprising finding, as higher education and work-status are normally associated with increased healthy behaviour, and have been found to be positively associated with breakfast consumption in previous studies in Palestine and neighbouring countries. Yet, important reasons for skipping breakfast included having no one to prepare breakfast, and skipping breakfast because the rest of the family does.

It is vital to understand the context defining public health issues to facilitate the design and implementation of effective public health interventions. In relation to breakfast consumption, for example, it is important to appreciate the nutrition transition, and its various components such as sedentary lifestyles, increased focus on weight, higher exposure to technology, and higher female employment rates. One potential intervention to improve breakfast consumption in Palestine may be to promote breakfast provision in schools. However, this would need a more comprehensive exploration of the characteristics of breakfast for different age groups and backgrounds. This was touched upon in our survey but would need more detailed investigation.

Strengths and limitations

Strengths

This study sheds light on factors related to breakfast consumption which are vital to designing public health interventions. These include a detailed investigation of the different associations between breakfast consumption and different characteristics of children and their parents, as well as factors which have not been looked at in the Palestinian context, such as exercise, sleep, and screen time. The survey also offered valuable insight into perceptions of breakfast and reasons for skipping it. In addition, the sample we surveyed is representative of the age group population under consideration.

Limitations

There was a relatively low response rate to the survey, which may challenge the generalisability of the findings, despite the representative sample. Within the survey, there was possible overlap in the definition of breakfast between the meal consumed at home before school, and the one consumed at school in the morning. This may have had an impact both on the responses and their analysis. Finally, although we collected basic information on the characteristics of breakfast which children consumed, this was an open-ended qualitative question. This means that there was insufficient detail to quantify what children consumed.

Conclusion

Breakfast is well-recognised as an important meal in our sample of Palestinian children. However, children are faced with many obstacles to eating breakfast consistently. On an individual level, these include long screen time and short sleep. On a structural level, home factors such as not having anyone to prepare food, and perceptions or fears around weight are important determinants. Public health interventions would therefore have higher chances of success if targeted at addressing such factors, rather than simply promoting breakfast. Future research should aim to better

understand the culture around breakfast, such as what children eat, and where they would be prepared to eat it, to support the design of effective public health interventions around it.

Declarations

Ethics approval and consent to participate.

This project acquired an ethical approval from the Institution review Board for Ethical approval from An-Najah National University. The research procedures were conducted in accordance with the principle expressed in the Declaration of Helsinki. The consent of participation was taken first from the school principals then from the parents through the school teachers, informed consent was obtained from all the parents and school's principals before the data collection.

Consent for publication

Not Applicable.

Availability of data and materials.

The dataset used and analysed in this study is available from corresponding Author on reasonable request.

Competing Interest

The authors declare they have no competing interests.

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Authors' contributions

The authors have contributed in the manuscript as the following; Manal Badrasawi: the principle investigator has written the study proposal and protocol and supervise the data analysis. Ola Anabtawi participate in the study protocol revision and write the first draft of the manuscript. Yaqout Al-Zain: has the responsibility for the research data management, and data analyss. All authors have read and approved the final manuscript.

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Figures

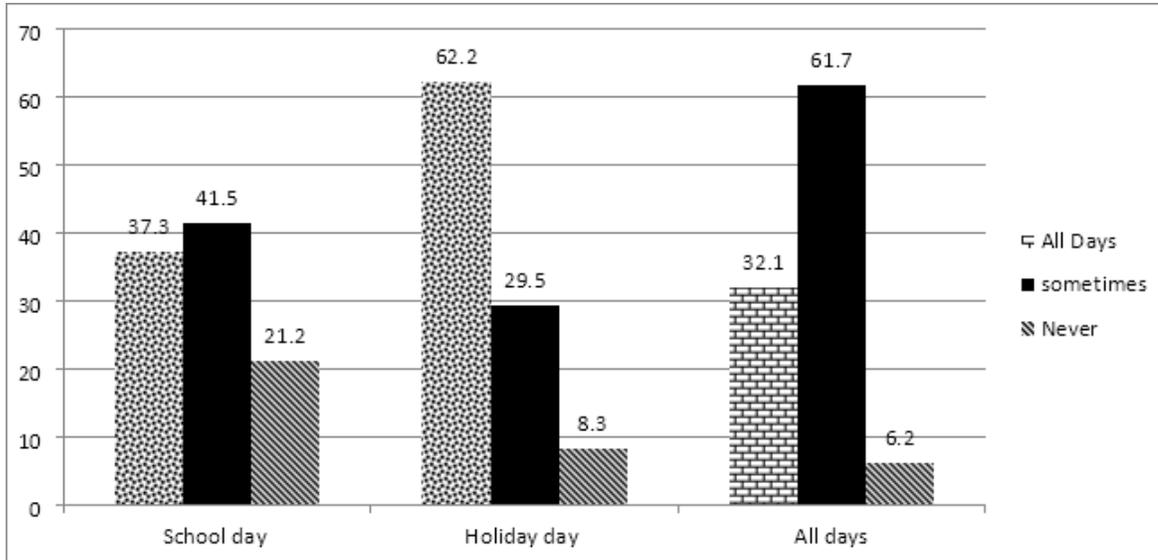


Figure 1

Breakfast and school meal eating during school and holiday days