

Analysis of Social Behaviour Change Tools for Adolescent Nutrition



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Ainaro

- Eskola Secundaria Tekniku Vocasional Ainaro Vila (magazine dissemination)
- Eskola Secundaria Tekniku Vocasional TASTOFA Hatu-Udo (magazine and nutrition sessions)

Bobonaro

- Eskola Sekundaria Maliana (magazine dissemination)
- Tékunik Vokasionál Bobonaro (magazine and nutrition sessions)

Baucau

- Escola Secundaria Geral Publica Baguia (magazine dissemination)
- Escola Secundaria Geral Publica Quelicai (magazine and nutrition sessions)

Viqueque

- Escola Secundaria Geral Publica Uatulari (magazine dissemination)
- Escola Secundaria Geral Publica Ossu (magazine and nutrition sessions)

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Background

There is a growing body of research that indicates adolescence is a ‘second window of opportunity’ to improve nutrition, as well as a critical window of time when lifelong behaviours are shaped. Adolescents have higher nutritional needs and require more protein and energy than any other age group.¹ Adolescents also have gender-specific nutrient needs, in particular adolescent girls as they begin menstruating and develop the capacity for future childbearing. Studies have shown the optimal diet to support adolescent girls’ healthy development is more expensive than the diet required by any other member of the household including pregnant or lactating women or an adult man.²

Adolescence may be the final opportunity to influence adult height and mitigate stunting. Growth and development during adolescence is impacted by nutritional, environmental and hormonal factors, and can therefore be modified and enhanced.³ Outside of the first 1,000 days of life (including gestation), this second window of opportunity to improve nutritional status is critical,⁴ especially in countries like Timor-Leste where almost half of all children under five years of age are chronically malnourished.

¹ Akseer et al., 2017. Global and regional trends in the nutritional status of young people: a critical and neglected age group. *Annals of the New York Academy of Sciences*, p.3-20.

² World Food Programme. 2017. *The Cost of the Diet Study in Indonesia*, p.20.

³ Campisi, S. et al, 2018. *The Intricate Relationship between Chronic Undernutrition, Impaired Linear Growth and Delayed Puberty: Is ‘catch-up growth possible during adolescence?’*, Innocenti Working Papers no. 2018-12, UNICEF.

⁴ UNICEF Office of Research - Innocenti, 2017. *The Adolescent Brain: A second window of opportunity*.

Introduction

TOMAK and the World Food Programme (WFP) carried out formative research on adolescent nutrition in 2018. The purpose of the study was to inform the development of interventions, activities and materials targeted at supporting adolescents' nutrition from a social behaviour change (SBC) perspective. The formative research indicated that adolescents practice poor nutrition behaviours during school and at home but that they are eager champions of new ideas and have the potential to be agents of positive nutrition change. In a country like Timor Leste - where one in every four citizens is an adolescent - this represents a considerable opportunity for change, not only for the adolescents themselves, but also for their households and communities.

The formative research also revealed CARE's *Lafaek* magazine as a trusted source for health and nutrition related topics. Based on this research finding, TOMAK and WFP collaborated on the development of a *Lafaek* Special Edition on Adolescent Nutrition,⁵ which focuses on the promotion of three key nutrition-related behaviours that the research showed adolescents control for themselves (versus meals at home which are dictated by parents).

TOMAK wanted to assess the effectiveness of the Special Edition as a stand-alone behaviour change tool and when delivered in conjunction with facilitated nutrition sessions. To do this TOMAK collaborated with two of its implementing partners, Catholic Relief Services (CRS) and Mercy Corps (MC), on an adolescent nutrition intervention designed to engage adolescents around key nutrition practices using the Special Edition. This report describes the findings of the assessment and the impact of the intervention.

Promoted behaviours, magazine and posters

The *Lafaek* Special Edition magazine focuses on three key nutrition-related behaviours that adolescents have agency to control for themselves:

1. Selection of healthy and balanced snacks at school
2. Selection of water as the only healthy drink choice
3. Consumption of breakfast prior to school.

The 15-page magazine underwent rigorous testing to ensure that it appealed to adolescents and includes stories, games and other interactive content. TOMAK also developed a set of three posters, one for each promoted practice, designed to complement the Special Edition in classrooms.



Stories and content from the *Lafaek* Special Edition for Adolescent Nutrition (English translation)

⁵ *Lafaek* Special Edition on Adolescent Nutrition: http://tomak.org/resources/lafaek-ba-nutrisaun-adolexente_tet/; http://tomak.org/resources/lafaek_adolescents-english/



Corresponding set of posters promoting the three key practices (English translation).

To accompany the magazine, a series of three facilitated nutrition sessions were developed that focused on the subjects covered in the magazine, drawing on content of the magazine as interactive tools. An additional two sessions were developed by Mercy Corps that focus on nutrition-sensitive agriculture (NSA) and NSA services offered by Community Development Agents (CDA). The action planning session consisted of individual commitments, where each student was asked to fill out a form that included actions for themselves, with friends and family. In addition to individual commitments, nutrition session students developed group action plans that included: dissemination of the Special Edition to other students in their grade that did not participate in the sessions, putting the posters up in their classrooms, and facilitating an activity such as a nutrition drama or discussions with other classes using content from the Special Edition.

Facilitator Guide: Nutrition Sessions

- Session 1:* Introduction to nutrition
- Session 2:* Nutrition for adolescents
- Session 3:* Healthy snacks & drinks & action planning
- Session 4:* NSA
- Session 5:* CDA and voucher

Objectives

The key objectives of this study were:

- To assess the effectiveness of the Special Edition as a stand-alone tool to increase knowledge on nutrition, self-efficacy, intention to act, and behaviour change; and
- To assess the extent to which coupling the Special Edition with nutrition discussions increases the effectiveness of the Special Edition as a tool to increase knowledge on nutrition, self-efficacy, intention to act, and behaviour change.

Methods

The assessment was carried out with a sample of adolescents that participated in the nutrition sessions with the Special Edition, their peers, and adolescents that only received the Special Edition at school.

A written questionnaire was administered prior to the sessions/distribution of the Special Edition (Aug/Sep 2019), and again at the end of the final sessions/interventions (Nov/Dec 2019). Both the pre- and post-tests were self-completed and administered with teachers and partner staff monitoring that there was no access to

Timeline of SBC process:

- Apr-Aug 2018:* Formative research
- Feb-Jun 2019:* Development of Special Edition
- Aug-Dec 2019:* Implementation of the intervention & assessment

any materials other than the pre-or post-test. The questionnaire focused on knowledge, attitudes and practices, specifically relating to key messages from the Special Edition. The pre-post-test design was used to assess the impact of the intervention. To ensure quality and consistency, the nutrition sessions were monitored using a facilitation checklist. The students' results were matched during the analysis of the data, meaning that only students who did both the pre- and post-test were assessed. Table 1 summarises the number of students from each municipality that were included in the assessment.

Table 1: Breakdown of adolescents involved in the assessment

Intervention	Pre- Post Test Total	Ainaro	Baucau	Bobonaro	Viqueque
Nutrition session students	67 (64% female)	12	21	13	21
Magazine only students	100 (62% female)	22	31	21	26
Peers ⁶	103 (64% female)	20	32	22	29

Student selection for involvement in the nutrition sessions was based on the following criteria:

- Total number of students depended on # of facilitators. For 2-3 facilitators: 15-20 students;
- 50% gender split;
- Students living within 30 minutes of the school and students living more than one hour from school;
- Diversity in academic performance (students with lower and higher grades);
- Students aged 15-19 years.



Students undertake a pre-test in Viqueque.

⁶ Note only the post-test was conducted with the peer group of students. See limitations section for further details.

Implementing staff noted that this criteria was followed during the selection process and reflected that the nutrition session participants were a diverse group (e.g. confident to speak up, understanding new concepts quickly, versus shy to speak up).

Key informant interviews were conducted with teachers after the intervention. The interview focused on the observations of the adolescents' changes in practices and the teachers' general engagement with the intervention.

Any primary data collection conducted by TOMAK includes a procedure for informing respondents of the purpose and process of the research and seeking consent of respondents ahead of any data collection. Teachers and individual students signed informed consent forms. Approval for this pilot was also obtained from the Ministry of Education (MoE).

Implementation arrangements

Partner	Roles within pilot
TOMAK	<ul style="list-style-type: none"> • Developed facilitator guide and facilitated Training of Trainers (ToT). • Produced a set of three posters to accompany the Special Edition. • Carried out quality monitoring visits. • Facilitated sessions with partners. • Led assessment design, implementation of assessment, reflection with partners, and write-up.
CRS	<ul style="list-style-type: none"> • Coordinated schedule with schools. • Carried out pre/post-test in both implementation and dissemination only schools. • Facilitated three sessions on nutrition with adolescents from two schools in two municipalities. • Provided healthy snacks during sessions. • Disseminated the Special Edition during the session.
Mercy Corps ⁷	<p><i>Same as CRS plus:</i></p> <ul style="list-style-type: none"> • Facilitated two additional NSA sessions with adolescents from two schools in two municipalities. • Provided vouchers (per class) to be given to a Mercy Corps CDA to build a demonstration keyhole garden. • Provided a small amount of funds (\$40 per class) for adolescent participants to carry out nutrition advocacy within their schools (e.g. nutrition drama, engagement with food vendors, peer-to-peer nutrition discussions, presentations to Parent Teacher Association).

Limitations

Coordination was carried out with MoE at the municipal level and directly with school principals to:

- Select nutrition session and dissemination schools
- Identify schedule for sessions
- Identify students

Despite coordination efforts, the implementation of sessions was affected by changing exam schedules (set at the national level) which requires school closure even for students that are not required to take national exams. Students were selected from year 2 in high school because they are not required to take these exams, but TOMAK and partners were not able to predict this

⁷ Mercy Corps leveraged funds from one of their existing donors for implementation.

challenge ahead of time. Many students live with family during the school year and return to their family home when school is not in session. This resulted in lower numbers for the post-test since many of these students had returned home for the extended holiday. Prior to this pilot, TOMAK and partners had not worked in schools. Relationships had to be established prior to commencing activities.

In an attempt to reduce the need for enumerators or additional staff, as well as to save time and reach a larger sample size, a decision was taken to ask students to self-complete the pre- and post-questionnaires, rather than be interviewed by an enumerator. This was deemed an appropriate approach for the target group, given they are secondary school students and are more than likely to have the literacy levels necessary to self-complete a questionnaire. The research team made an effort to keep the questions simple and use basic and commonly used language, and the questions were piloted with a number of adolescents. Despite efforts to keep the questionnaires simple, the students took a long time to complete the questions. There was one particular question response style – ‘all of the above are correct’ or ‘options a and c are correct’, that the students were not familiar with and found confusing. The staff implementing the intervention were able to mitigate these issues by providing additional support to the students, but this was intensive and conducting the questionnaires took much longer than anticipated. In future, the research team recommends reducing the number of questions and building in additional time in the study to allow for self-completed pre- and post-test questionnaires.

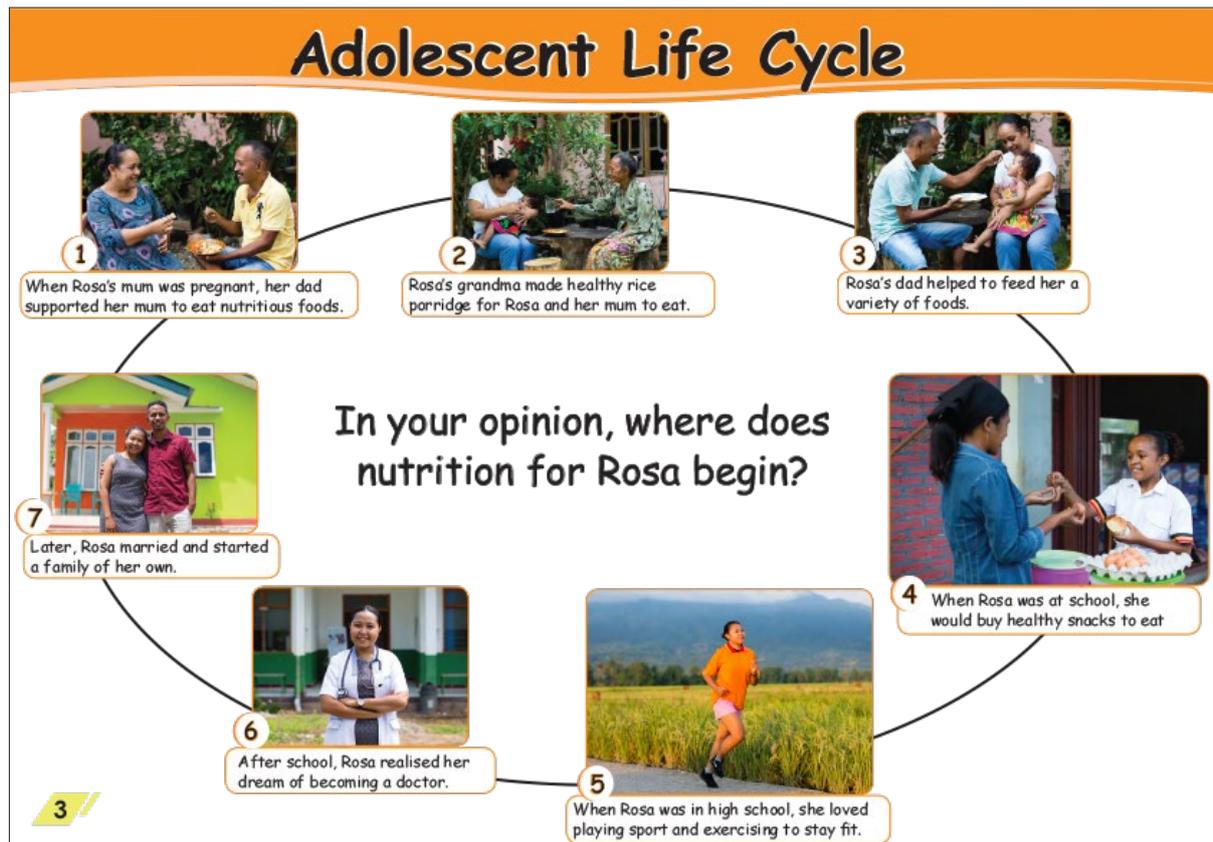
The results in this report are presented in two sections: results from students that participated in nutrition sessions and results from students that only received the *Lafaek* Special Edition. It should be noted that the nutrition session students received two slightly different interventions: the CRS schools received three nutrition sessions and the Mercy Corps schools received five sessions. The first three sessions in all schools followed the same detailed session guide and monitoring was conducted to ensure the classes were facilitated in strict accordance to the guide. The additional two sessions in Mercy Corps schools focussed on new topics, although it is possible that some of the nutrition topics covered in the previous three sessions came up during sessions four and five. The pre- and post-test only covered topics from the first three sessions and not sessions four and five. Initial analysis does not show a clear difference between the results from the CRS and Mercy Corps schools with regard to the two additional sessions and vouchers; however, deeper analysis is required to test this further.

The original study plan involved conducting the pre- and post-test with a group of peers from the schools where the nutrition sessions were implemented. The pre-test component of this plan was overlooked however, due to the unanticipated time involved with conducting the pre-test with the nutrition session students, and only the post-test was conducted with peers. TOMAK matched pre-post-test students so that analysed results include students who did both the pre- and the post-test. Results from pre-test students that did not complete the post-test were disregarded. With no pre-test results for peers to compare post-test results to, this report only includes results from the additional questions at the end of the post-test that ask the peer group of students if they received nutrition information from their classmates.

Results

Knowledge

The pre- and post-test included a number of questions to assess students' knowledge before and after the intervention in the areas of: i) the three food groups⁸; ii) eating breakfast before school; iii) healthy and balanced snack choices; iv) drinking water; as well as v) the more general link between adolescence and nutrition.



Adolescent life cycle story in the Special Edition.

The students from both the nutrition session group and the magazine only group showed relatively good general knowledge of the importance of good nutrition for adolescent health, with similar increases observed in the post-test for both groups (Figure 1). Both groups saw a roughly 20% increase in responses correctly identifying the link between nutrition during adolescence and pregnancy. Figure 2 shows the results from a multiple-choice question asking students why nutrition is important during adolescence. A high percentage of students from both groups selected the correct answer in the post-test. The questions from Figures 1 and 2 relate to a life cycle story in the Special Edition as displayed above.

⁸ The Timor-Leste Ministry of Health (MoH) promotes three food groups: carbohydrates, vitamins & minerals, and protein. A variety of partners in Timor-Leste working in health align with MoH's three food groups. The food group activity in the nutrition sessions is not unique to TOMAK and is used by many partners.

Figure 1: Question - Nutrition during adolescence affects women and babies during pregnancy

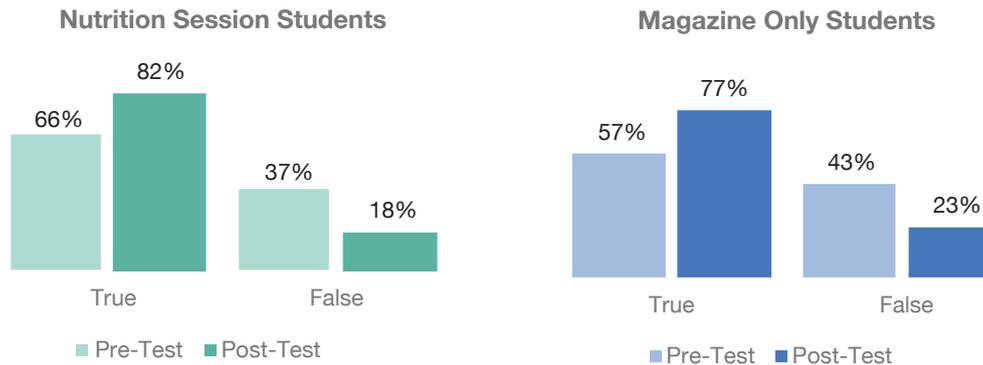
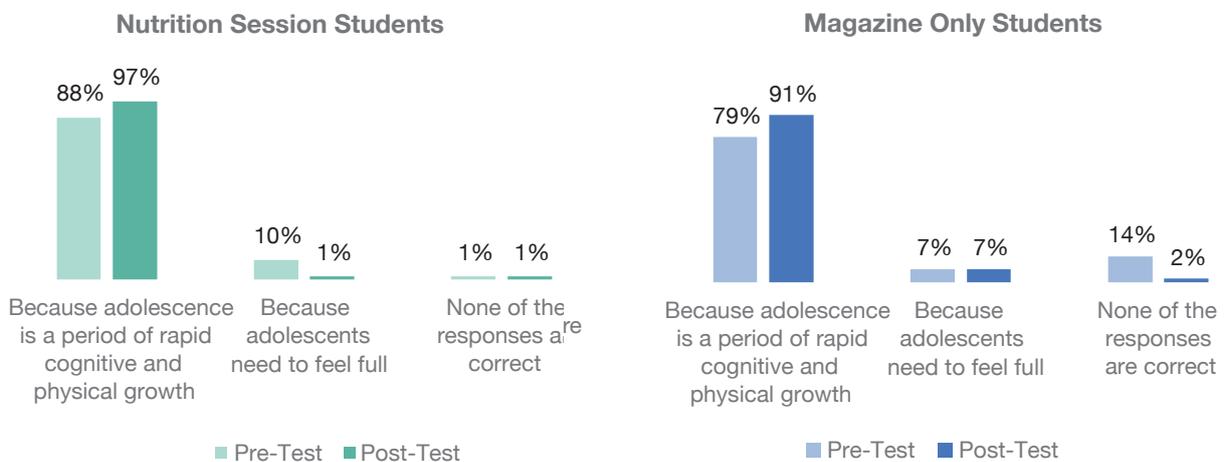
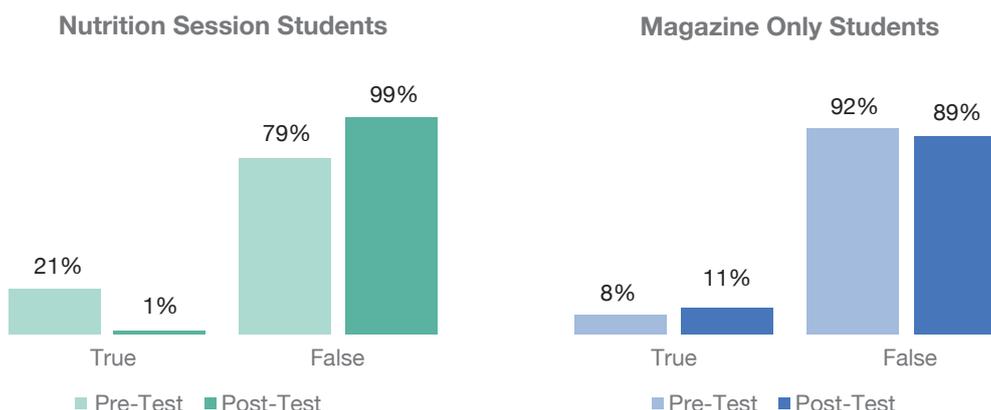


Figure 2: Question - Why is good nutrition during adolescence important?



Students from the nutrition session group had lower baseline responses than the magazine only students for the true-false question: *Foods with a lot of sugar in them are good because they give you energy*. In the post-test, 99% of nutrition session students answered the question correctly while there was a slight decrease in correct answers by the magazine only students. While there is a figure in the Special Edition that suggests that sugary foods can result in lethargy, there is no specific mention that the foods displayed in the image are high in sugar. During the nutrition sessions, however, a greater focus was placed on identifying foods that have a high sugar content.

Figure 3: Question - Foods with a lot of sugar in them are good because they give you energy





Three food groups

In an open response question, students were asked to write down the three food groups. Although the original intention was for the students to list the names of the three food groups, which many students did, a number of students also listed an example food from each of the three food groups, which was also deemed to be a correct answer. Figure 4 shows substantial improvement from pre- to post-test in both groups, particularly the nutrition session group, with nutrition session students' correct responses increasing from 12% to 99% and magazine students' responses increasing from 7%-71% from pre- to post-test. In a separate question that was also designed to test knowledge of the three food groups, students were asked to identify a list of protein-rich foods (Figure 5). An increase in the correct answer was observed in both groups, with a greater increase in the nutrition session group (nutrition session students: 34% pre-test to 81% post-test | magazine only students: 42% pre-test to 61% post-test).

Figure 4: Students who could list the three food groups

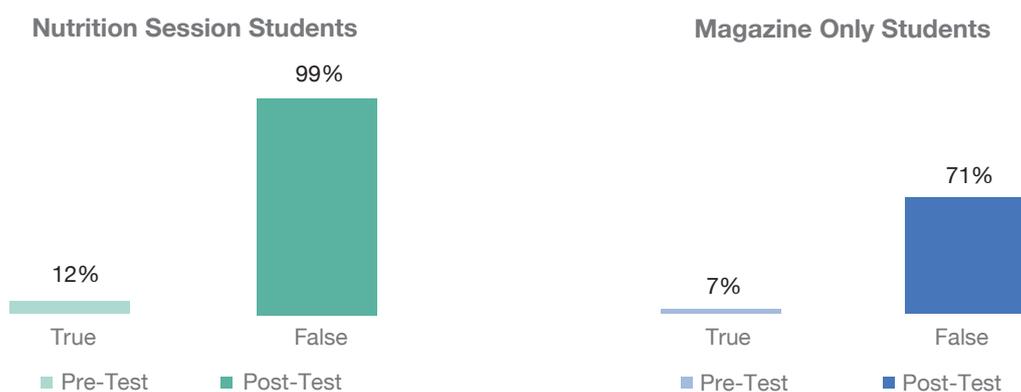
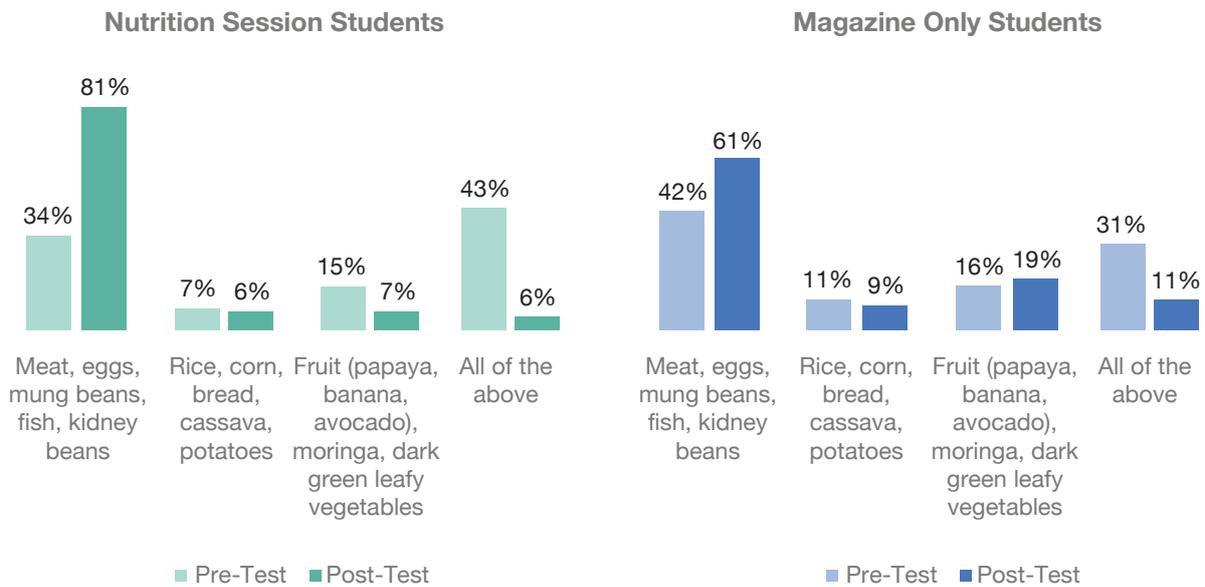


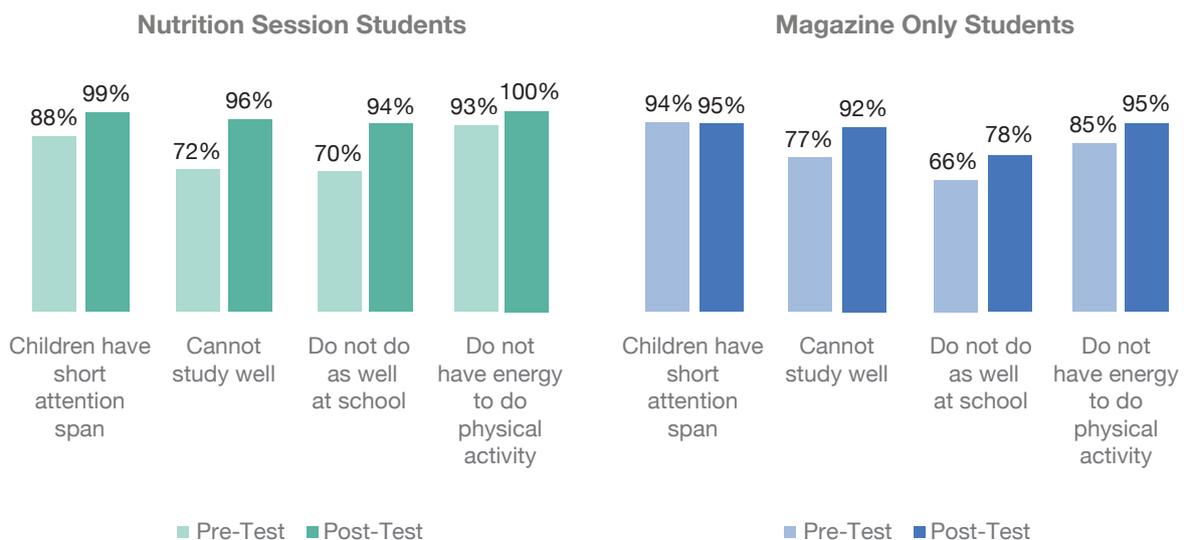
Figure 5: Question - What are some examples of protein foods?



Breakfast

Students from both the nutrition session group and magazine only group were able to identify some of the potential problems associated with skipping breakfast, and their scores increased from pre- to post-test. This question was asked as an ‘agree’ or ‘disagree’ question. See Figure 6 for details.

Figure 6: Question - What problems can adolescents have if they don’t eat before going to school?



Water

Promoting water as the healthiest and best drink option was a major theme of the Special Edition and the nutrition sessions. Grouping fruit flavoured drinks together with other unhealthy snacks was also a theme of the Special Edition, and the nutrition sessions placed particular emphasis

on highlighting the sugar content of such drinks. The results from the nutrition session students in the post-test showed a clear increase with 100% of students selecting water as the healthiest option (57% responded 'water' in the pre-test). The magazine only group were also more likely to choose water in the post-test; however, the increase was not as great and some students still selected fruit flavoured drinks as the healthiest option (Figure 7). This finding was reinforced by the results from a true-false question about fruit flavoured drinks being good for you because they contain vitamins (Figure 8). Again, nutrition session students were much more likely to choose the correct response (false) than magazine only students (nutrition session students: 16% pre-test to 97% post-test selected 'false' | magazine only students: 17% pre-test to 51% post-test selected 'false').

Another question asked students to estimate the sugar content of fruit flavoured drinks. In the pre-test, 73% of nutrition session students reported that such drinks do not contain any sugar, only juice. This result reduced to 3% in the post-test, with the majority of students recognising the high sugar content of fruit flavoured drinks. This topic was not specifically covered in the *Lafaek* Special Edition so the students in the magazine only group that selected the response that these drinks do not contain sugar only decreased from 75% to 57% in the pre- and post-test.

Figure 7: Question - What drink is healthiest and the best?

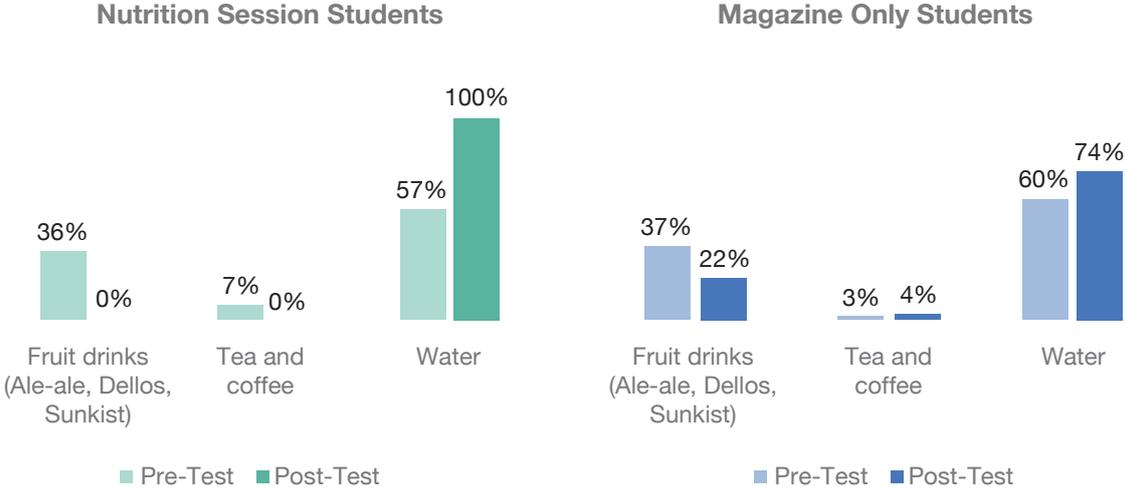
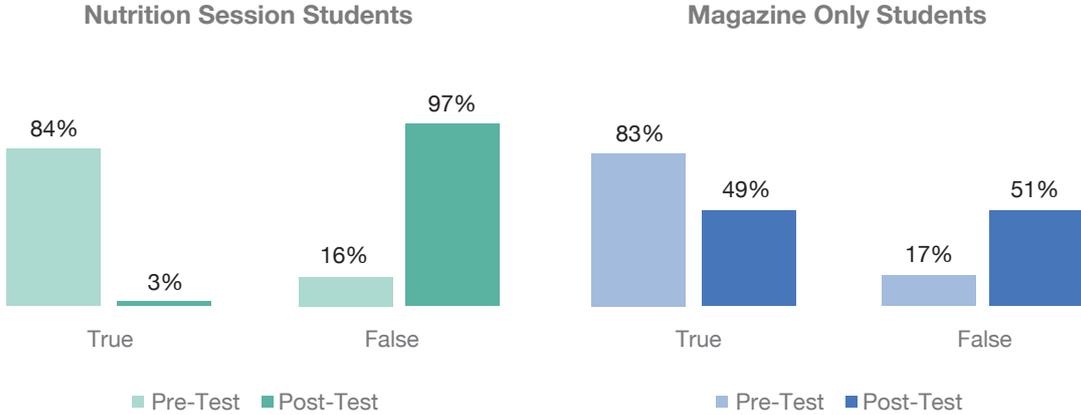


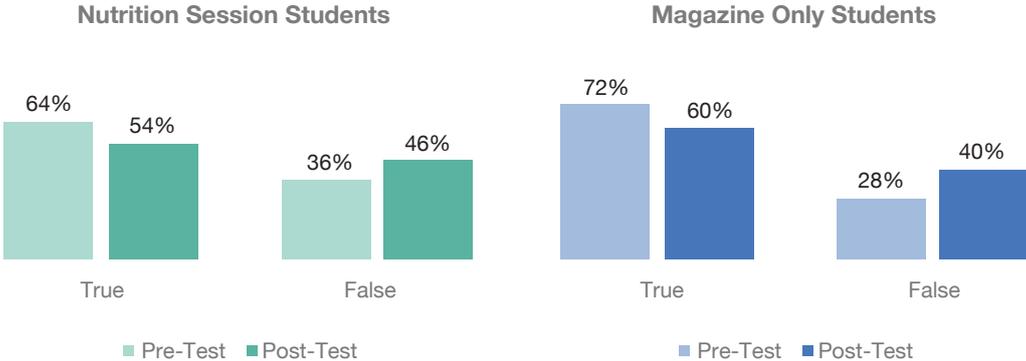
Figure 8: Question - Drinks Ale-Ale and Dellos are good for your health because they contain vitamins



Attitudes

A series of questions was asked on the three food groups, breakfast, snacks and water to assess whether or not the intervention influenced the students' attitudes on specific points related to each of these topics. The students were asked a true-false question about whether you need a lot of money to eat nutritious foods, with the expectation that more students would choose 'false' in the post-test, representing an attitude shift that there are affordable options for nutritious foods. Both groups did see an increase in the percentage of students who selected 'false' in the post-test, however, the shift was minor with the majority of students still agreeing with the statement. This could be in part due to the question not specifically asking about affordable healthy snack options but referring to nutritious foods more generally.

Figure 9: Question - You need a lot of money to eat nutritious foods



Three food groups

Students from the nutrition session group were much more likely to shift their attitudes to place higher importance on having different types of foods at meals and snacks in the post-test (Figure 10). Overall, 93% of students chose 'important' or 'very important' to having different types of foods at meals versus 64% at baseline. The magazine only group went from 68% of students selecting 'important' or 'very important' in the pre-test to 83% in the post-test. As displayed in Figure 11, the majority of students from both groups were more likely to report that it is 'not difficult' for them to choose snacks from at least two food groups from the pre- to post-test, however, the shift in attitude was more pronounced amongst the nutrition session students (nutrition session students: 73% pre-test to 90% post-test selected 'not difficult' | magazine only students: 88% pre-test to 94% post-test selected 'not difficult').

Figure 10: Question - How important is to have different types of foods at meals and snacks?

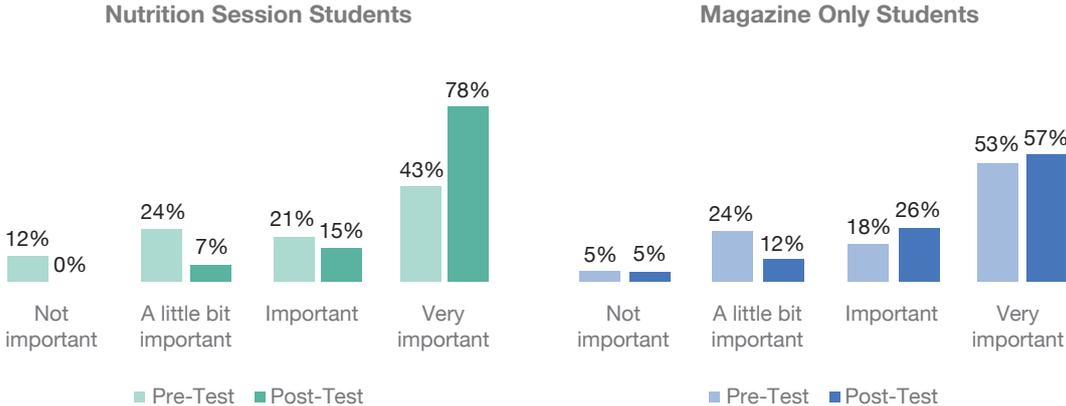
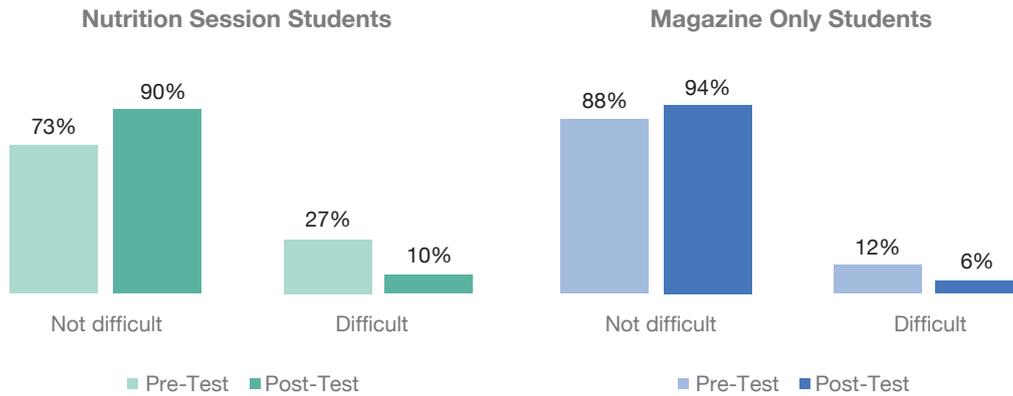


Figure 11: Question - How difficult is it for you to choose snacks at school that include foods from two food groups?



Breakfast

In the pre-test, the students from both groups were already likely to report that it is ‘not difficult’ for them to have breakfast before going to school (nutrition session students: 81% selected ‘not difficult’ | magazine only students: 90% selected ‘not difficult’) and the ‘not difficult’ response increased further in the post-test to 97% and 94% respectively (Figure 12). Similarly, as displayed in Figure 13, the students from both groups were also likely to respond ‘disagree’ to the statement I prefer to sleep longer than wake up early to eat breakfast (nutrition session students: 85% selected ‘disagree’ | magazine only students: 89% selected ‘disagree’). The post-test responses also increased to 96% of session students disagreeing with the statement and 92% of magazine students disagreeing with it.

Figure 12: Question - How difficult is it for you to have breakfast before going to school?

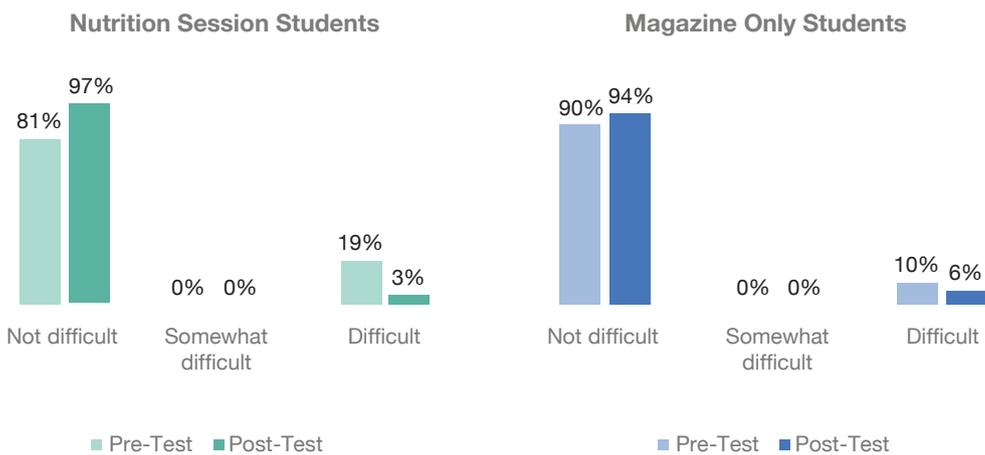
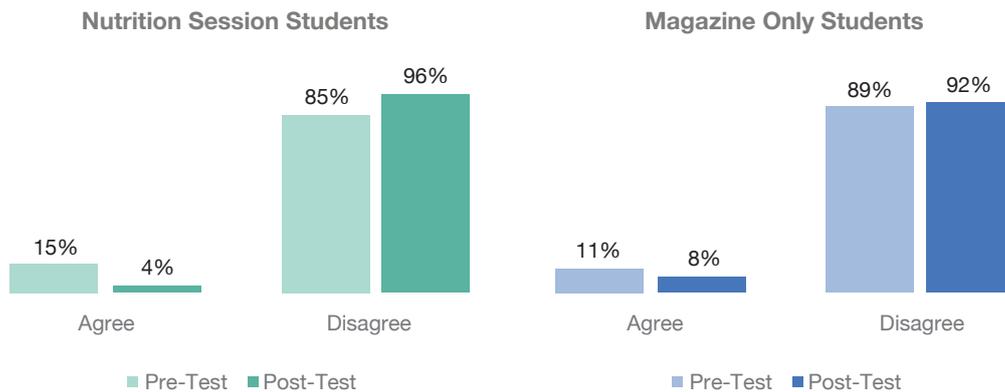


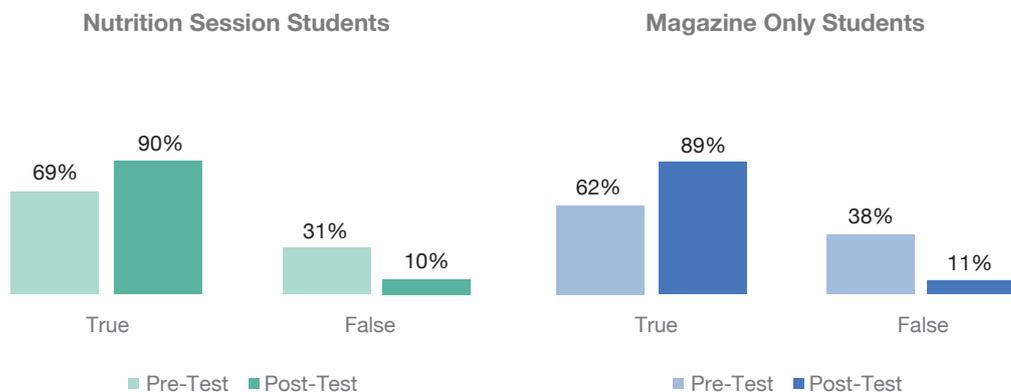
Figure 13: Question - I prefer to sleep longer than wake up early to eat breakfast



Snacks / Water

The *Lafaek* Special Edition encourages students to bring water from home to drink at school (see image on page 3). Students were asked to respond to the true-false question: if I don't spend money to buy water at school, I can use the extra money to buy healthy snacks. Roughly 90% of students from both groups responded 'true' to this statement in post-test (Figure 14). The nutrition session students had a higher baseline result for this question so the shift observed is more pronounced amongst the magazine only students.

Figure 14: Question - If I don't spend money to buy water at school, I can use that extra money to buy healthy snacks



Another major focus of the Special Edition was promoting the message that \$0.50 cents is enough money to buy a healthy snack at school (see image on page 3). In the pre-test for both groups, over 80% of students stated that \$0.50 is sufficient to purchase a healthy snack at school but this percentage increased by roughly 10% in both groups in the post-test, bringing the session students to 99% and the magazine students to 94%.

Perceived influence on nutrition

Students were asked a series of questions about the influence they can have over nutrition for themselves, their parents and their friends. The shift in responses from 'no' or 'little' influence to 'strong' influence was more pronounced amongst the nutrition session students, particularly for influence over parents and friends (Figures 15, 16 and 17). The strength of influence for magazine only students increased most in the question referring to influence over friends' nutrition, with

influence over parents' nutrition having a slight increase and influence over own nutrition remaining consistently high at 90% (Figures 15, 16 and 17). Both student groups followed the same pattern of stating that they have the strongest influence over their own nutrition, followed by their parents', followed by their friends' nutrition, with magazine only students more likely to select 'strong' influence for all categories at both pre- and post-test compared to nutrition session students.

Figure 15: Question - I believe that I can influence better nutrition for myself

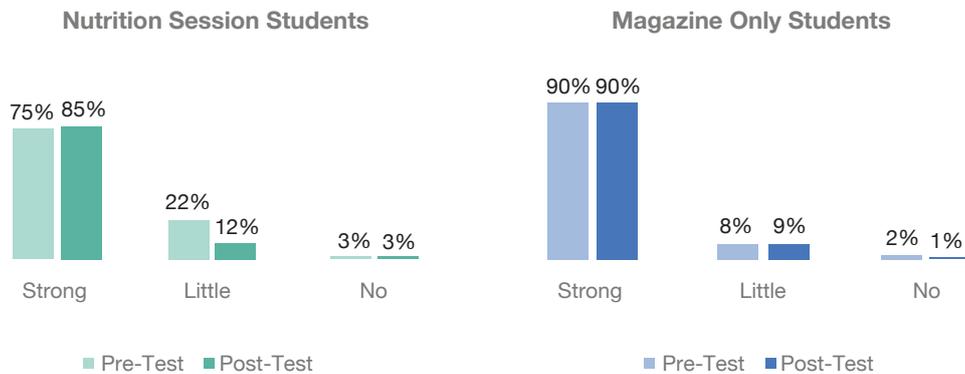


Figure 16: Question - I believe that I can influence my parents to have better nutrition

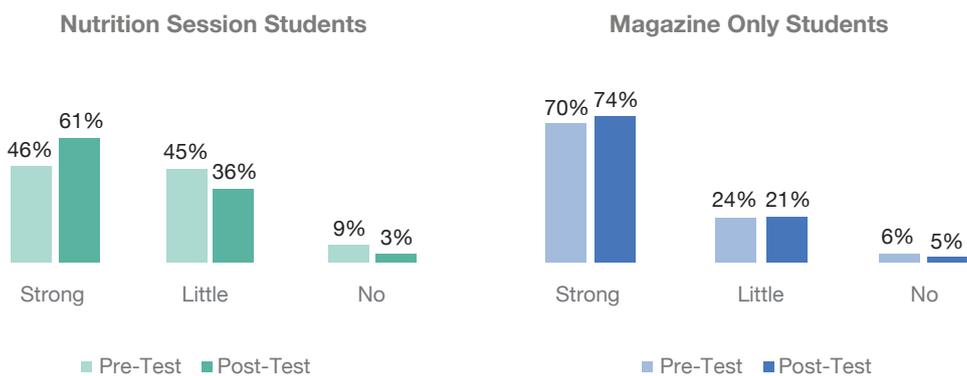
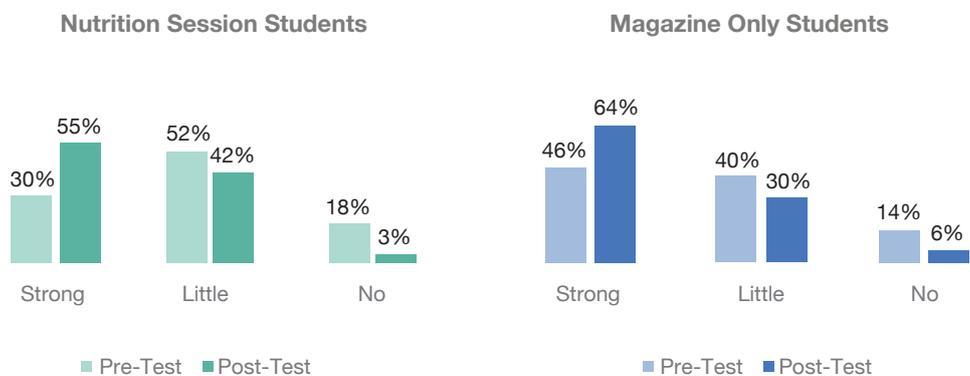


Figure 17: Question - I believe that I can influence my friends to have better nutrition





Nutrition session students identify healthy snack and dinner options based on the 3 food groups.

Behaviour

A series of behaviour-related questions were asked about breakfast, snacks and water to assess the extent to which students changed their behaviour related to these topics after the intervention had occurred.

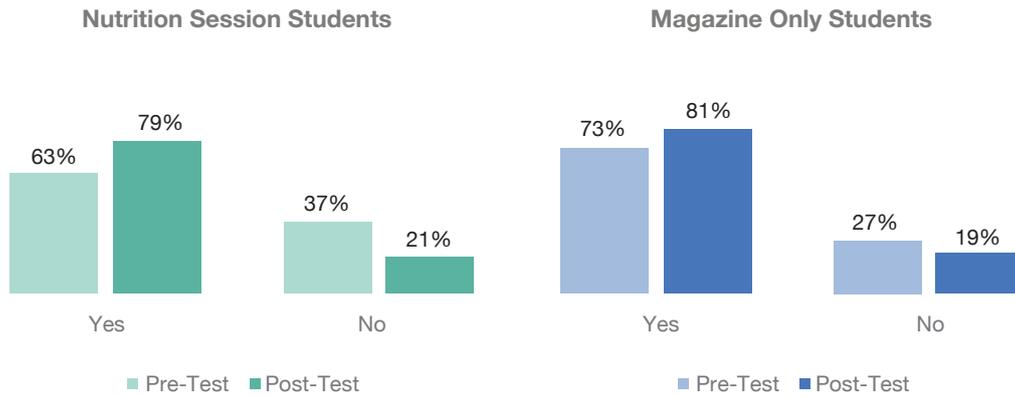
Breakfast

The vast majority of students that participated in the assessment reported having breakfast on both the day of the pre-test and the day of the post-test (nutrition session students: 93% pre-test, 100% post-test | magazine only students: 97% pre-test, 95% post-test). As a result, minimal difference in this behaviour was observed between the pre- and post-test.

Snacks

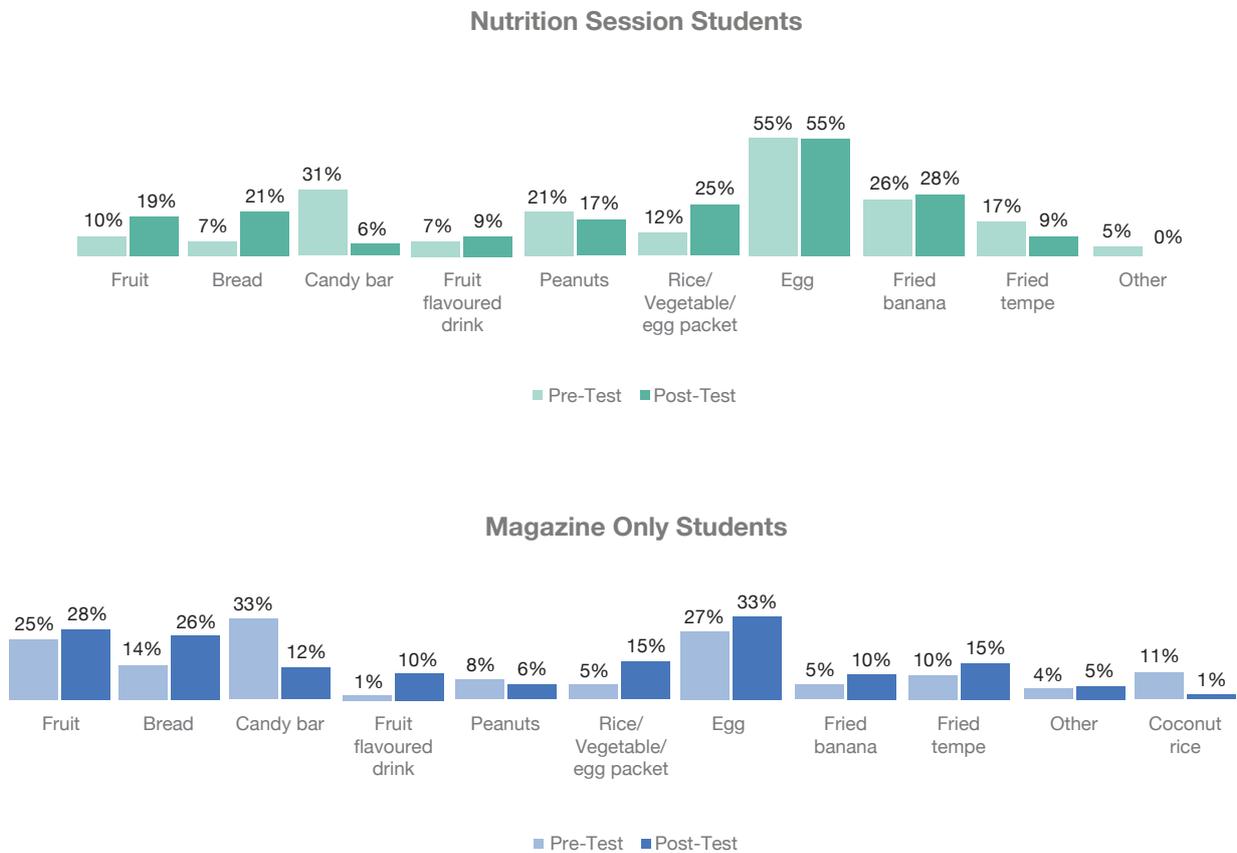
All of the students assessed were more likely to report having a snack during recess on the previous day during the post-test compared to the pre-test (Figure 18). The increase was greater in the nutrition session students, however the baseline was lower for this group. Both groups of students reported eating a snack during recess on the previous day at a rate of roughly 80%.

Figure 18: Question - Did you eat any snacks during recess at school yesterday?



The Special Edition promoted a variety of healthy snacks including eggs, bread, peanuts, fruit, tempeh, and rice with tempeh. Its messaging discouraged unhealthy snacks such as chocolate bars, fruit flavoured drinks, doughnuts and instant noodles. As displayed in Figure 19, more nutrition session students reported eating healthy snacks such as fruit, bread, and rice with tempeh after the intervention. The students were also far less likely in the post-test to report eating candy bars as snacks. Magazine only students reported very similar results in terms of snacks eaten more frequently and less frequently after the intervention, however the rates at which students reported the snacks varied between the two groups.

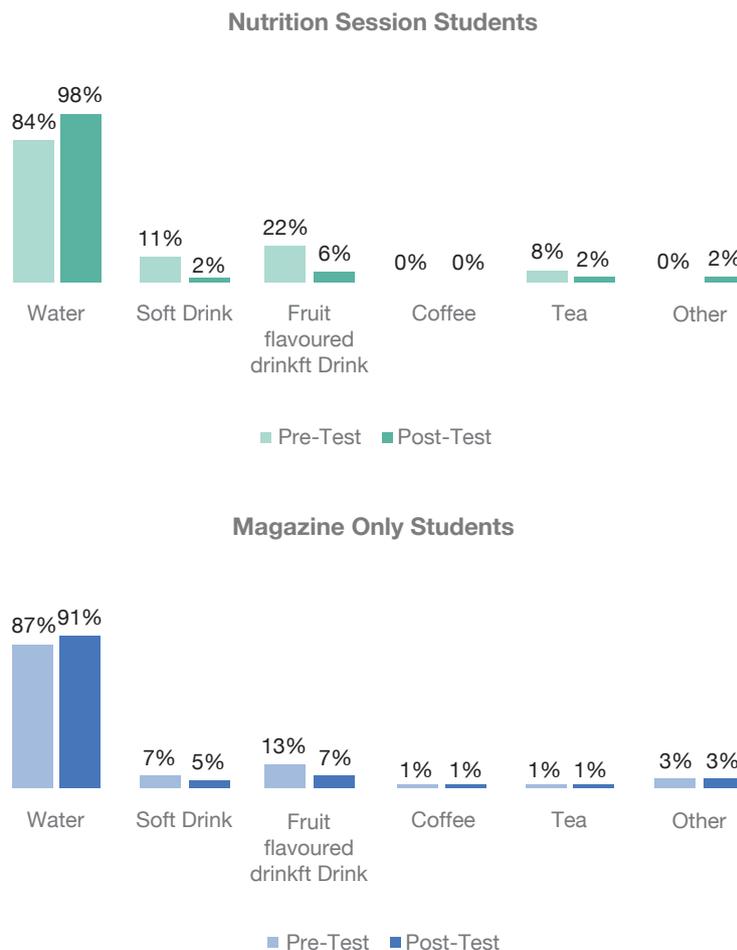
Figure 19: Snacks that students reported eating during recesses the previous day



Water

Students were asked if they drank anything when they were at school the previous day and if they did, they were asked what they drank. In the pre-test, 55% of nutrition session students said they drank something at school the previous day, versus 79% in the post-test. For the same question, magazine only students went from 67% in the pre-test to 86% in the post-test. Although reported consumption of water was already high amongst both groups of students (as evident in Figure 20), both groups were more likely to report drinking water in the post-test. Consumption of soft drinks and fruit flavoured drinks decreased in both groups of students, but the decrease was more pronounced amongst the nutrition session students.

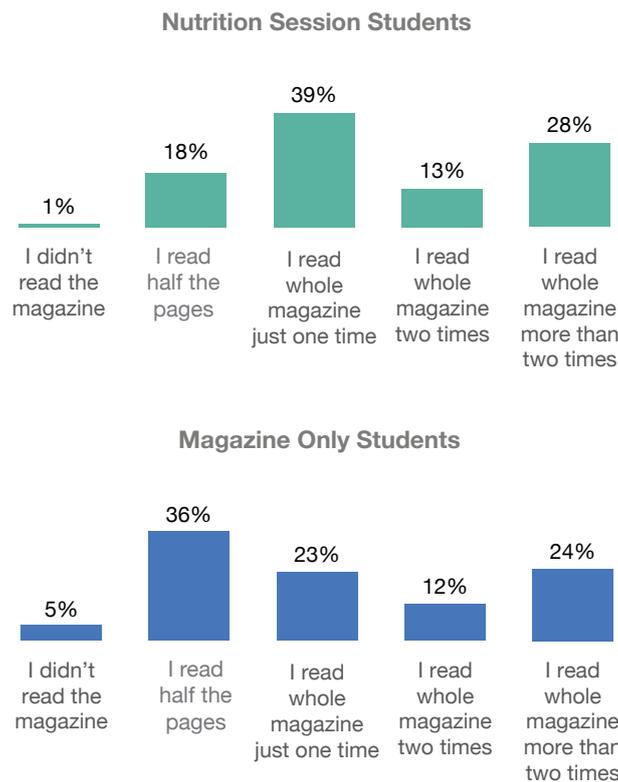
Figure 20: Drinks that students reported drinking at school the previous day



Use of the *Lafaek* Special Edition

In the post-test, students were asked how they used the *Lafaek* Special Edition that was given to them during the intervention. Of the nutrition session group, almost all students read at least part of the magazine, 48% reported reading and discussing it with their friends and 64% said they gave it to their sibling or another family member to read. Amongst the magazine only group, the majority of students also reported reading at least part of the magazine, while 47% discussed it with their friends and 35% reported giving it to their sibling or another family member. As displayed in Figure 21, the students in the nutrition session group were more likely to read the full magazine (81%) compared with the magazine only group (59%). Similar rates of students reported reading the magazine multiple times across both groups.

Figure 21: Question – Which response is true of you?



Self-reported behaviour changes after the intervention

In an open-ended question, students were asked to explain anything they had done differently in their life since the intervention. The students from the nutrition sessions group listed a variety of actions, including: getting up early to have breakfast before school (39%); bringing a healthy snack to school to share with friends and complete foods from the three food groups (15%); drinking water (9%); using \$0.50 to buy healthy snacks (4%), reducing intake of drinks and food with a lot of sugar (4%). A further 7% simply said they learned a lot from the *Lafaek* Special Edition. Fifteen percent (15%) of nutrition session students reported not doing anything differently yet, and a further 4% reported that they did not know if they had done anything differently.

In response to the same question, the magazine only group of students reported: eating breakfast before going to school (19%); making changes by following what is in the *Lafaek* Special Edition and answering the activity questions in the magazine (19%); eating nutritious food from the three food groups (17%); bringing snacks and water from home in order to drink more water, and reducing having drinks with a lot of sugar (9%); discussing nutrition with friends and family (4%); and filling out the questions in the magazine (4%). A couple of students also mentioned eating iron rich foods to prevent anaemia, while some students did not answer the question.

“Before I read the Special Edition, I didn’t know about nutritious foods but after I read the magazine, I learned about it and tried to practice this through eating a healthy breakfast before school.”

- Magazine only student

Nutrition session students sharing nutrition knowledge with others

Sixty-seven percent (67%) of nutrition session students reported discussing nutrition with their friends over the previous month. Of those students, the topics they discussed included: the three food groups (40%); reducing consumption of sugary drinks and drinking a lot of water (20%); eating breakfast before school for strength (11%); and healthy snacks (7%). A further 20% simply wrote that they discussed nutrition/nutrition for adolescents. The majority (roughly 80%) of these students said the discussions were informal, before or after school or during recess, while roughly 20% reported there was a formal presentation or class discussion. Sixty-two percent (62%) of the nutrition session students reported that their friends were interested in discussing nutrition with them and agreed to try what they discussed, 29% said their friends were interested in the topic but thought it would be too hard for them to implement and 9% of the students reported that their friends were bored and disinterested in the topic.

The results indicate that students from the Mercy Corps intervention schools that received two additional nutrition sessions (total of five sessions) were more likely to share the information with their peers than the students from the CRS schools that only received three sessions (76% versus 58% respectively reported talking to their friends about nutrition during the previous month). Students from Mercy Corps schools were also more likely than CRS students to report that they feel they can influence their friends to have better nutrition (Figure 17).

Students' experience of the nutrition sessions

The nutrition session students were asked to explain in an open-ended response in the post-test what they liked and disliked about the nutrition sessions. The responses were overwhelmingly positive with the majority of students only identifying positive things about the sessions and only seven students highlighting things they disliked. The students listed the following aspects that



Students that were not selected to participate in the sessions, attempting to watch through the window in Bobonaro.

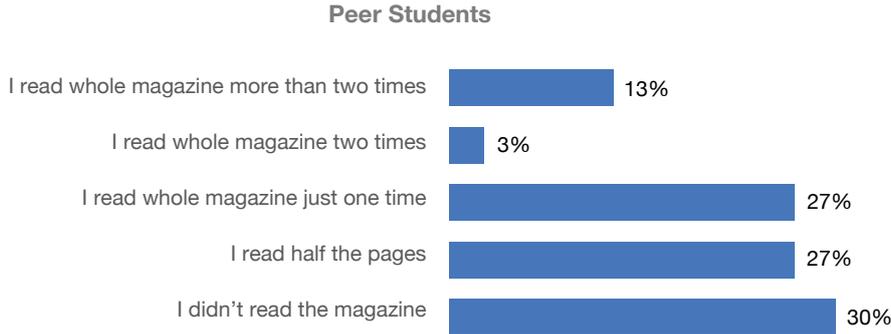
they liked about the nutrition sessions: the three food groups (39%); like everything (33%); water as the healthiest drink option (12%); healthy snacks (10%); adolescent life cycle (7%); breakfast before going to school (4%); and a few students mentioned specific sessions or sections of the Special Edition, like the ‘Ronaldo breakfast story’. The ‘dislikes’ were: no practice during session two (6%) and ‘explanation was not clear’ (4%), however it was not clear what explanation these students were referring to.

Peers

The post-test was conducted with a group of peers from the nutrition session school. The peer group consisted of 103 students that made up a similar demographic of the students involved in the intervention, but did not participate in the nutrition sessions. The Special Edition was distributed to the peers by the students who participated in the nutrition sessions, and in some cases, by teachers.

While 11% of peers reported not receiving the *Lafaek* Special Edition, others reported sharing it with a family member (50%), reading it and discussing it with friends (36%), reading it (15%), and 2% reported losing the magazine. The results displayed in Figure 22 indicate that 70% of students in the peer group read part or all of the Special Edition.

Figure 22: Question – Which response is true of you?



The peer students were questioned about anything they had done differently in their life since receiving the nutrition magazine. Although many students reiterated that they had not received the magazine, other students’ responses indicated that they had read the Special Edition. Most of their responses were general, simply indicating that they have followed the information they read, however, 21 peers specifically reported beginning to eat breakfast before school and five reported that they started to drink a lot of water.

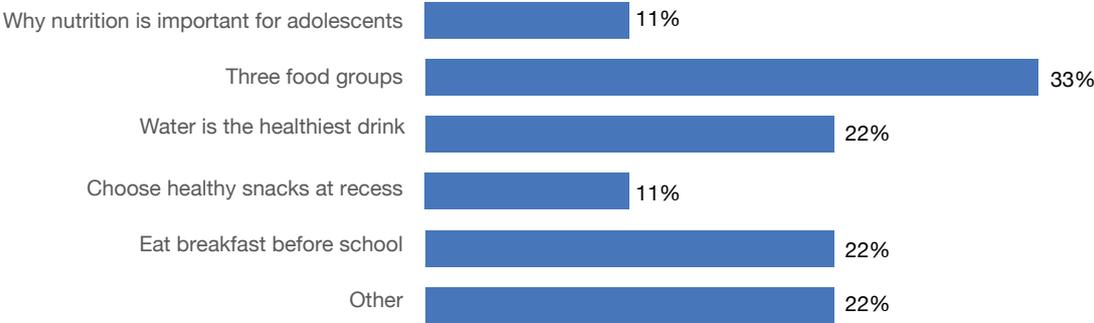
Twenty-three percent (23%) of the peer group students reported that their friends had talked to them about nutrition over the past month. This question was asked to get an idea of the extent to which the nutrition session students shared the information they learned during the sessions with their peers. When this data is separated into CRS schools that had three nutrition sessions and MC schools that had five nutrition sessions plus a small amount of funds provided to students to run nutrition sessions with their peers, the findings from the peer group of students suggest that the MC group were no more likely to share the messages with their peers than CRS schools (28% of peers in CRS schools reported that their friends talked to them about nutrition over the past month and 17% from MC schools reported this). Of the peers that reported discussing nutrition with their friends, planting and eating nutritious foods from the three food groups was the most common topic discussed.

Teachers

At the time of the post-test, the teachers from the nutrition session schools were interviewed to gain an understanding of their level of involvement with the intervention as well as their observations on the impact of the intervention. Interviews were conducted with seven male teachers and two female teachers who taught the students who were involved in the nutrition sessions. Five out of nine teachers reported participating in the nutrition sessions and four out of nine teachers reported participating in nutrition discussions with their students during the month prior to the interview. These teachers reported engaging in three or more nutrition discussions with their students. Six out of nine (67%) teachers responded that they had read the Special Edition.

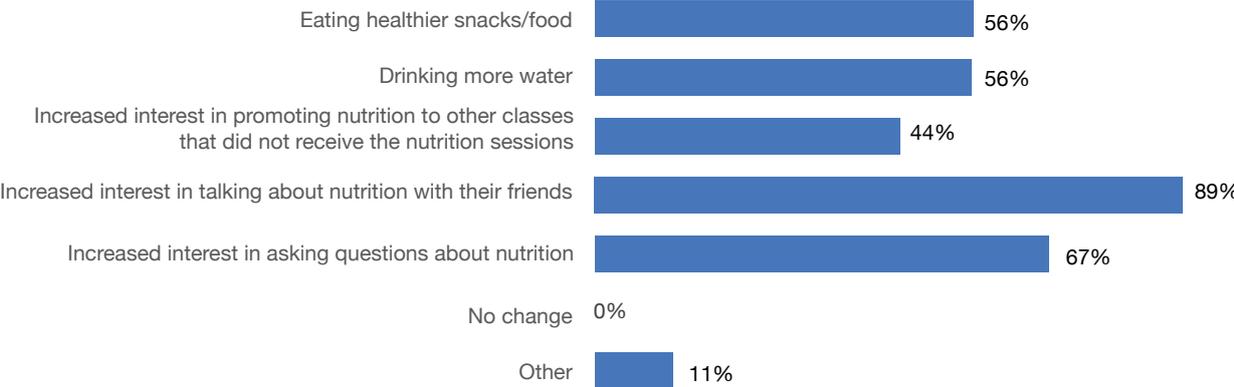
The teachers were asked if the students told the teachers about some of the topics that were covered during their nutrition sessions. Figure 23 displays the topics that the teachers report being told about.

Figure 23: Topics students told their teacher about



The teachers were also asked if they noticed any changes in the students’ nutrition-related behaviours after the intervention was implemented. Figure 24 summarises the teachers’ responses.

Figure 24: Have you noticed any changes in the students that participated in the discussions in terms of their interest in nutrition?



Overall, comments from teachers that were interviewed indicated that nutrition is a very important topic for their students. Teachers said that they appreciated these sessions and hoped they could continue and reach the whole student body.

Discussion

In general, it is clear that the *Lafaek* Special Edition had a positive impact on the three target behaviours that were the focus of the magazine. Based on the results from this study, the Special Edition is considered an effective tool to improve students' understanding of nutrition topics that are relevant for them. It is also clear, however, that coupling the Special Edition with nutrition sessions that elaborate on and reinforce the messages in the magazine further improves students' understanding of the benefits associated with choosing healthy snacks, drinking water and eating breakfast.

The key messages promoted throughout the nutrition sessions and within the *Lafaek* Special Edition relate to nutrition-related behaviours that adolescents have control over in their day-to-day lives. The pre-post-test design indicates the extent to which students' knowledge, practices and behaviour changed as a result of the intervention.

The intervention had a clear positive impact on the students' knowledge, attitudes and behaviours across most areas tested, however, in most cases the impact was greater for students who also participated in nutrition sessions. This result was expected as the nutrition sessions were used to reinforce the information provided in the Special Edition.

The three food groups were covered in both the Special Edition and the nutrition sessions as a basis to promote the importance of having a varied diet for good nutrition. The intervention had a significant impact on students' knowledge of the three food groups. The students had low baseline knowledge of the three food groups but this increased greatly in the post-test. This was particularly relevant for the nutrition session group where nearly all students could list the three food groups versus 71% of magazine only students. A similar trend was observed with students' attitudes on the importance of eating meals that consist of foods from the three groups, where the change in attitude was greater for nutrition session students than magazine only students.

The message to eat a variety of foods appears to have had greater impact on the nutrition session students. There was only a gradual decline (41% to 35%) amongst the magazine only students who selected the multiple-choice response that they could have a healthy snack by choosing a snack from only one food group. In the nutrition group, this response reduced to only 4%.

Knowledge about the importance of consuming water as the healthiest and best drink was another area with significant improvement amongst nutrition session students. Almost all nutrition session students changed their perceptions on fruit flavoured drinks as a healthy drink option. Although results in these areas did improve for magazine only students, the improvement was not as great. This is likely because the message of water being the healthiest drink option was further emphasised during the nutrition sessions. The Special Edition promotes water as the healthiest drink option, but aside from presenting fruit flavoured drinks as a part of a group of snacks that can cause lethargy, there are no other direct messages that highlight that fruit flavoured drinks are high in sugar and low in nutrition.

By highlighting inexpensive snack options from a variety of food groups within the Special Edition, it was intended that students would feel that it is realistic for them to have a nutritious diet. Although almost all students agreed that only \$0.50 is needed to buy a healthy snack at school, the intervention did not have an overly strong impact on students' attitude around the cost of eating nutritious foods. Despite some change from pre- to post-test, over 50% of students believe that a lot of money is needed to eat nutritious food. This finding might be linked to pre-existing notions that expensive foods like meat are required to have a healthy diet.

The key behaviour area that was least impacted by the intervention was eating breakfast, although this is largely because the baseline results in the pre-test revealed that students were already aware of the health benefits associated with eating breakfast, and they already felt it was important to eat breakfast. They agreed that it was not difficult for them to have breakfast before school, and most students already reported eating breakfast before going to school. Nonetheless, positive changes

across most of these points were observed in the post-test results compared to the pre-test.

As expected, students from the Mercy Corps intervention schools that received two additional nutrition sessions (total of five sessions) were more likely to report sharing the information with their peers than the students from the CRS schools that only received three sessions. This result is consistent with the approach of the additional intervention in the Mercy Corps schools that prompted students to make plans to discuss nutrition with their peers and also provided a small amount of money to support these efforts. These results were contradicted somewhat, however, by the peers from CRS schools that were more likely to report having spoken to their friends about nutrition in the previous month than peers from Mercy Corps schools. This finding could be explained by the peers being selected at random to receive the Special Edition, and therefore nutrition discussions between friends (other than the selected peers) might have occurred that are not captured in these results.

Reflection with the implementers of the intervention

“We noticed that the concept of food groups was really new for adolescents”

-CRS implementer

Individual and adolescent group actions post sessions

During a reflection session with implementers, the majority observed that adolescents were most interested in the topics of healthy snacks, demonstration activity of sugar content in fruit drinks, and the three food groups. There were some challenges around the development of both group action plans (Ainaro and Baucau) because other students and teachers were busy with national exams, so they could not organise activities such as nutrition discussions using the Special Edition with the wider student body. Implementers observed that students preferred small group informal conversations (e.g with friends during recess) as way to engage their peers on nutrition. Students in Bobonaro were interested in dissemination of the Special Edition and formal sessions, but there were no students around to do the formal sessions at the end of the school year. Following the sessions, students in Bobonaro advocated against serving only fried noodles and plain rice as a meal during a school training, which was then later changed to include sardines and vegetables.

Logistics

The two-hour time allocation for each session was deemed sufficient. Some of the sessions pushed up against lunch time, resulting in participants being very hungry. In the future, implementers recommend starting the session with the healthy snack (rather than providing the snack at the end).

Coordination with teachers

There was close coordination with teachers to administer the pre-test and their participation/ observation during session 1 was high. Over the course of the sessions, teacher observation decreased, possibly attributable to responsibilities with national exams and not having specific roles within the study. Teacher involvement was not a key objective in this study and focused on assessing the effectiveness of the Special Edition. However, it is acknowledged that in the future, if school-based activities are designed, they should include an identification of teacher role in consultation with MoE.

Vouchers for agriculture services

Nutrition session students in Ainaro and Bobonaro received vouchers (one per class) during session 5. Students attempted to contact the CDA, but ultimately did not cash in their vouchers because they could not agree on a date, since it was already school holidays and many students had gone back to their home (some of whom live hours away from the school). The CDA also did not want to carry out the activity over the Christmas break when Mercy Corps staff were not available to verify the activity. In future, Mercy Corps recommends that vouchers are provided to adolescents based on geographic location, with the involvement of parents, and with additional monitoring from Mercy Corps to support the process.

Nutrition activities

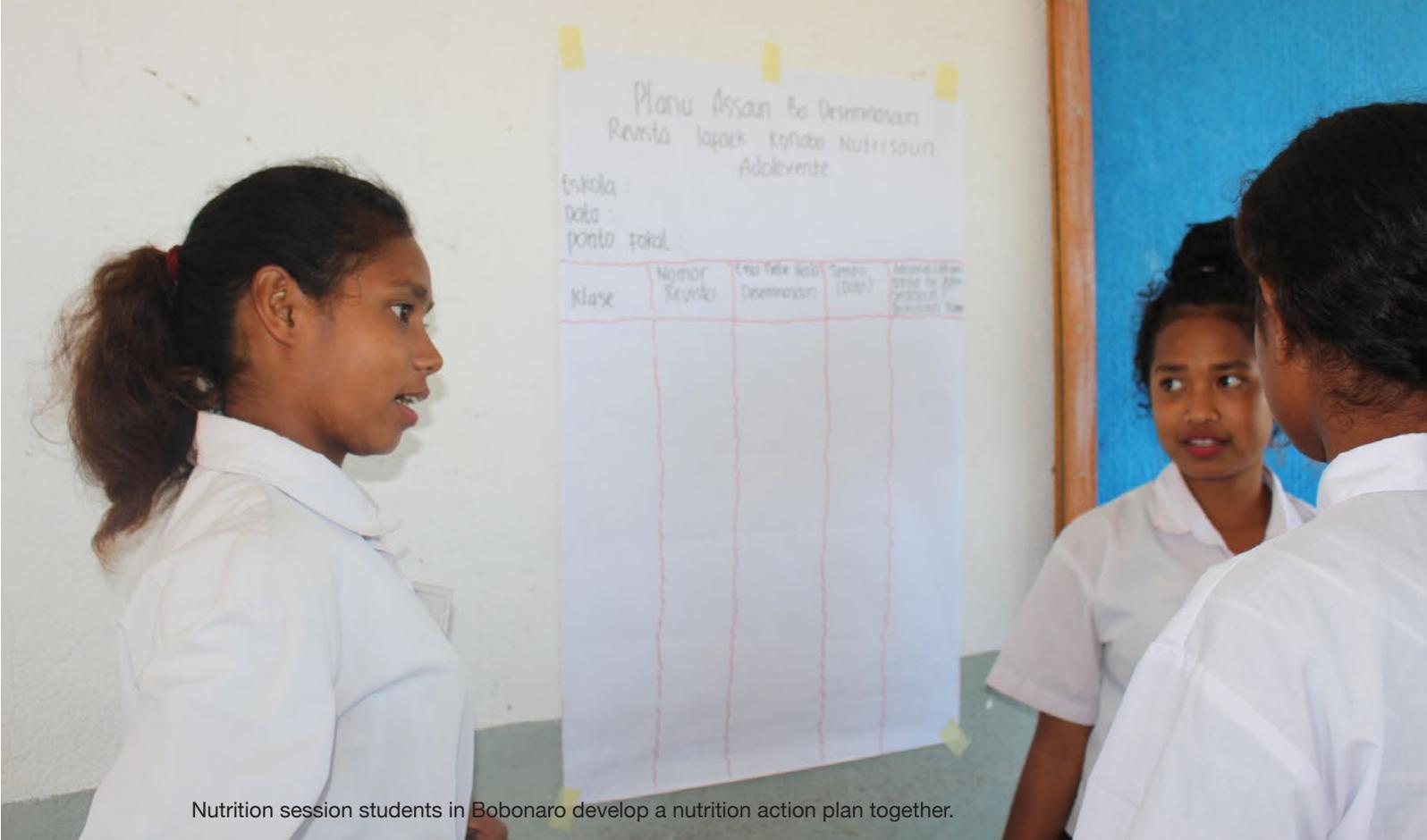
In addition to the agriculture vouchers, nutrition session students in Ainaro and Bobonaro were offered \$40 in-kind support that could be used to purchase supplies associated with a nutrition activity in their school based on the session and Special Edition topics. In Bobonaro, students developed a plan to demonstrate to their peers how much sugar is in fruit drinks and discuss snack options that include the three food groups. This request was submitted to Mercy Corps on short notice and was not realised. In Ainaro, nutrition session students carried out a discussion with their peers (12 students) based on content in the Special Edition.

“There was such strong interest that several non-selected students watched the entire sessions from outside the classroom windows.”

- Mercy Corps implementer Ainaro.

Conclusion

Formative research was fundamental to uncovering key behaviours and appropriate communication channels for adolescents. Testing the magazine’s content and evaluating the impact of the intervention allowed for the development of a quality product that contributes to TOMAK’s overall SBC approach. The Special Edition as a stand-alone product does increase knowledge, attitudes and self-efficacy around improved adolescent nutrition practices and has the potential to be used in a variety of settings. This study also demonstrates that the Special Edition results in greater increases in knowledge, attitudes and in changing behaviours when used in conjunction with facilitated nutrition sessions.



Nutrition session students in Bobonaro develop a nutrition action plan together.

Recommendations

TOMAK is entering its final year of Phase 1 (2016-2021) with an optional second 5-year phase (Phase 2). Given this strategic timing, the following broad recommendations are put forth to relevant stakeholders including implementing partners, MoE/MoH, and the Australian Department of Foreign Affairs and Trade (DFAT):

1. For future activities aimed at adolescent nutrition, continue to focus on engaging adolescents around key nutrition related practices that they can control themselves. Furthermore, maintain a focus on a narrow set of behaviours, such as the three key behaviours promoted through this intervention, as this approach is likely to achieve greatest impact.
2. The results of this intervention demonstrate that the Special Edition is an effective stand-alone SBC material. With limited budgets and human resources required to carry out nutrition sessions, dissemination only of the Special Edition is a significantly cheaper option to promote key nutrition behaviours to adolescents.⁹ However, magazine dissemination alone should not be considered an intervention and should ideally be linked to other activities (e.g. see recommendation 3 and 5).
3. While this pilot was largely intended to assess the Special Edition, it would be important to consider how to involve MoE/MoH in short targeted sessions without developing/duplicating an official curriculum. Options for this could include the integration into extracurricular activities that take place on Saturdays or into existing Health Clubs at schools.
4. Most adolescents (70%) in Timor-Leste are in school so the best way to reach them would be through school either during school hours, or outside of school hours. For programs like TOMAK, where the key audience includes farming families in rural suku, reaching adolescents

⁹ Depending on economies of scale, the Special Edition can be printed locally in Timor-Leste for \$6-8 USD with a minimum of 500 copies printed.

is logically challenging. High schools in Timor-Leste are predominantly located in more urban areas (municipal and administrative post towns). Students often live with extended family when school is in session and return to their home locations during school breaks. For TOMAK to engage adolescents under Phase 2, this would require a change to implementation locations.

5. TOMAK and partners should explore further how to link the promotion of the three key nutrition practices for adolescents to support practices for parents and other household influencers of nutrition (e.g. grandmothers) and how this could be integrated into existing community groups (savings and loans groups, agriculture groups, community nutrition groups).
6. While the intervention shows that adolescents are consuming breakfast prior to going to school, there should be a continued focus on what constitutes a healthy breakfast.
7. Activities in schools should be completed by October to avoid conflict with national exam schedules and the end of the school year.

Short-term next steps

1. Present results to DFAT and the Partnership for Human Development (PHD) Program in Timor-Leste. *Aug 2020*
2. TOMAK and implementing partners should present results back at municipal levels with representatives from MoE, school leadership, teachers and a representative number of students. *Sep - Oct 2020*
3. TOMAK should disseminate additional copies of the Special Edition to implementation schools (not just the nutrition session students) along with poster sets. *Sep - Oct 2020*



Nutrition session participants and facilitators in Viqueque.

Annex A: Pre/post test tools

Pre- and post-test for all students

Date	
Name	
Year of birth	
Sex (select one)	Female / Male
Class	
Regular class time (select one)	Morning / Afternoon
Minutes required to walk from home to school	
Number of adults (19 years and above) living permanently in your house	
Number of youth (0-18 years) living permanently in your house (including yourself)	

Circle true or false for each of the following questions:

- | | | |
|--|------|-------|
| 1. Foods with a lot of sugar in them are good because they give you energy | TRUE | FALSE |
| 2. Drinks Ale-Ale & Dellos are good for your health because they contain vitamins | TRUE | FALSE |
| 3. You need a lot of money to eat nutritious foods | TRUE | FALSE |
| 4. If I don't spend money to buy water at school, I can use that extra money to buy healthier snacks | TRUE | FALSE |
| 5. Symptoms of anaemia are pale face, weakness, dizzy, headache, tired | TRUE | FALSE |
| 6. Nutrition during adolescence will affect women and their baby when pregnant | TRUE | FALSE |

Circle the correct answer for each of the following questions:

7. Why is good nutrition during adolescence important? (circle only one)
- Because adolescence is a period of rapid cognitive and physical growth
 - Because adolescents need to feel full
 - None of the above
8. What are the three food groups? (fill in)
- _____
 - _____
 - _____
9. Why is it important to try to eat from each food group every day? (circle only one)
- So that your teacher does not get angry at you
 - Because some foods give you energy, some prevent sickness and other foods support body and mental strength
 - Because there is no one food that gives you all the nutrients that your body needs
 - None of the above
10. What are some examples of protein foods? (circle only one)
- Meat, eggs, mung beans, fish, red beans
 - Rice, maize, bread, cassava, potatoes, taro
 - Fruit (papaya, banana, avocado, orange), moringa and green leafy vegetables
 - All of the above

11. Eating lots of sugar over a long period of time can result in: (can circle multiple)
- Acne
 - Diabetes
 - Cavities
 - Heart problems
 - Liver problems
12. What problems can adolescents have if they don't eat before going to school? (circle YES or NO)
- | | | |
|---|-----|----|
| a. Children have short attention | YES | NO |
| b. Cannot study well | YES | NO |
| c. Do not do as well at school | YES | NO |
| d. Do not have energy to do physical activity | YES | NO |
13. What are some healthy breakfast choices? (circle only one)
- Plain porridge
 - Bread and egg
 - Fried rice with eggs and green leafy vegetables
 - b and c
 - all of the above
14. How good for you do you think it is to have breakfast before going to school? (circle only one)
- Not good for you
 - Doesn't make a difference
 - Good for you
- 14a. If Not good for you: Can you write the reasons why it is not good? (write response)
-
-
15. How difficult is it for you to have breakfast before going to school? (circle only one)
- Not difficult
 - Difficult
- 15a. If Difficult: Can you write the reasons why it is difficult? (write response)
-
-
16. I prefer to sleep longer than wake up early to eat breakfast. (circle only one)
- Yes
 - No
17. Do you skip breakfast 3 or more times a week? (circle only one)
- Yes
 - No
18. Did you have breakfast before going to school today? (circle only one)
- Yes
 - No
- 18a: If yes, where did you have breakfast today? (circle only one)
- Home
 - School
 - On the way to school
 - Other
19. What drink is healthiest and the best? (circle only one)
- Fruit drinks (Ale-ale, Dellos, Sunkist)
 - Water
 - Tea and coffee
 - Soft drink (Coca-Cola, Sprite)

20. How much sugar does Dellos or Ale-Ale contain? (circle only one)
- No sugar, only juice
 - 1 tablespoon
 - 4 tablespoons
 - 8 tablespoons
21. Did you drink anything when you were at school yesterday? (circle only one)
- Yes
 - No
22. If yes, what did you drink (can circle multiple)
- Water
 - Soda (Sprite, Coca Cola, etc.)
 - Fruit flavoured drink (Ale-Ale, Dellos, Sunkist, etc.)
 - Coffee
 - Tea
 - Other (specify) _____
23. What is a healthy snack? (circle only one)
- Egg and bread
 - Peanuts and oranges
 - Gresh and Sunkist (drinks)
 - Meal pack with rice, tempe and cassava leaves
 - a, b, d
24. How much money do you need to buy a healthy snack at school? (circle only one)
- 50 cents
 - \$2
 - 10 cents
 - \$3
25. How can you choose healthier snacks that you buy during recess? (circle only one)
- Choose snacks from 1 food group
 - Choose snacks from 2 to 3 food groups
 - Share with friends so you can share snacks from all 3 food groups
 - b and c
26. What are some examples of foods that can prevent anaemia? (circle only one)
- Green vegetables, eggs, red meat, fish, beans
 - Rice, bread, potatoes, pumpkin
 - Bananas, avocado, papaya
 - All of the above
27. How important is to have different types of foods at meals and snacks? (circle only one)
- Not important
 - A little bit important
 - Important
 - Very important
28. How difficult is it for you to choose snacks at school that include foods from 2 food groups? (circle only one)
- Not difficult
 - Difficult
- 28a. If difficult, can you write the reasons why it is difficult? (write response)
-
-
29. Did you eat any snacks during recess at school yesterday? (circle only one)
- Yes
 - No

30. What did you eat? (can circle multiple)

- a. Fruit
- b. Bread
- c. Chocolate bar
- d. Peanuts
- e. Meal packet with rice and vegetable
- f. Egg
- g. Fried banana
- h. Fried tempe
- i. Donut
- j. Other (write)_____

31. Choose the number from 1 to 5 which best shows your level of nutrition, where number 1 is poor nutrition and number 5 is very good nutrition (choose one)

1 2 3 4 5

32. Does your family have a farm/home garden for vegetables/crops? YES NO

33. How do you support your family to farm vegetables/crops? (can choose multiple)

- a. Weeding
- b. Harvesting
- c. Planting
- d. Cooking produce from the farm
- e. Farming (general)
- f. Other_____
- g. Do not have a farm/garden

34. To what extent can you influence your parents to support improved nutrition?

- a. A lot
- b. A little
- c. Not at all

35. To what extent can you influence your friends to support improved nutrition?

- a. A lot
- b. A little
- c. Not at all

36. To what extent do you believe you can improve your own nutrition?

- a. A lot
- b. A little
- c. Not at all

37. Does what you produce on the farm influence family nutrition? YES NO

38. Have you received information about nutrition from another organisation? YES NO

Write the name of NGO/organisation_____

ADDITIONAL POST-TEST QUESTIONS FOR NUTRITION SESSION STUDENTS

Being a nutrition promoter

39. Do you think that your parents know what the 3 food groups are? YES NO

40. Do your parents think it is important for you to eat breakfast before going to school? YES NO

41. Do you think that your friends from other classes know what the 3 food groups are? YES NO

42. Do your friends from other classes think it is important to eat breakfast before going to school? YES NO

43. What did you like most about the nutrition lessons?

44. What did you like least about the nutrition lessons?

45. What did you do with the magazine about adolescent nutrition that you received? (Can circle multiple)

- a. Lost it
- b. Gave it to a younger sibling/other family member
- c. Read it
- d. Read it and discussed it with friends
- e. Other, specify

46. Which response is true for you? (circle only one)

- a. I didn't read the magazine
- b. I read only some of the pages in the magazine
- c. I read the whole magazine once
- d. I read the whole magazine twice
- e. I read the magazine more than twice

47. Please explain anything you have done differently in your life since receiving the nutrition magazine and the nutrition lessons:

48. How was the nutrition magazine given out to other students at the school? (select one)

- a. Given out by the nutrition session facilitators
- b. Given out by teachers to each class to take home
- c. Given out by students to each class to take home
- d. Given out by teachers along with a discussion about topics from the magazine
- e. Given out by students along with a discussion about topics from the magazine
- f. Other_____

49. Have you talked to your friends about nutrition over the last month? (circle only one)

- a. Yes
- b. No

49a. If yes, what did you talk about? (be specific)

50. When did you talk to them? (can select more than one)

- a. Informal conversations with friends during recess, before or after school
- b. Formal presentation or discussion during class
- c. Over the weekend
- d. Other, specify_____

51. What did your friends think?

- a. They thought it was boring and were not interested
- b. They were interested in the topic but thought it would be too hard to do
- c. They were interested in the topic and agreed to try it
- d. Other, specify_____

ADDITIONAL POST-TEST QUESTIONS FOR THE PEERS OF NUTRITION SESSION STUDENTS AND FOR STUDENTS WHO ONLY RECEIVED THE MAGAZINE (DISSEMINATION ONLY)

Peers AND dissemination only students

52. Have you heard of *Lafaek* magazine?

- a. Yes
- b. No

53. Have you seen the *Lafaek* magazine about adolescent nutrition?

- a. Yes
- b. No

53a. If yes, do you remember what picture was on the front? (explain)

54. Where did you get the *Lafaek* magazine about adolescent nutrition from?

- a. Teacher
- b. Friend at school
- c. Family member
- d. Other (specify) _____

55. What did you do with the magazine about adolescent nutrition that you received? (can circle multiple)

- a. Lost it
- b. Gave it to another family member
- c. Read it
- d. Read it and discussed it with friends

56. Which response is true for you? (circle only one)

- a. I didn't read the magazine
- b. I read only some of the pages in the magazine
- c. I read the whole magazine once
- d. I read the whole magazine twice

57. Please explain anything you have done differently in your life since receiving the nutrition magazine:

58. Have you talked to your friends about nutrition over the last month?

- a. Yes
- b. No

58a. If yes, what did you talk about? (be specific) _____

59. When did you talk with them? (can choose more than one)

- a. Informal conversations during recess, before or after school
- b. Formal presentation or discussion during class
- c. Over the weekend
- d. Other _____

60. Have you tried to do any of the things they asked you to do?

- a. Yes
- b. No

60a. If yes, please explain what you have done: _____

60b. If yes, do you think that you might continue?

- a. Yes
- b. No

60c. If yes, why? _____
