

A Study on Nutritional Messaging for Adolescents in Adilabad, Telangana, India



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ABSTRACT

India has one of the highest rates of malnutrition in the world. Women, children and adolescents living in the tribal villages of India are especially vulnerable to undernourishment. Although government programs have been established to target these communities, the focus of these programs is mainly on children and women, leaving adolescents to be even more vulnerable. However, nutrition is just as crucial during the adolescence period as it is during infancy. Adolescents undergo great physical and mental development during this time and it is important that they have proper nutrition in order for them to grow into healthy adults that will raise the next generation.

Previous studies have indicated that although there are plenty of food and water resources, there is still a prevalence of malnutrition amongst adolescents in the tribal villages of Adilabad district in the state of Telangana, India. The following study aims to understand why malnutrition is so prevalent amongst adolescents and whether or not a lack of nutritional education is a factor of malnutrition. The purpose of the project is to assess the existing nutritional awareness, provide adolescents with nutritional messages and evaluate their ability to understand the message in order to determine how future nutritional messaging should be executed.

The insight provided by the conducted interviews and focus group discussions was used to analyse the current nutritional awareness of adolescents, their parents and their teachers. An understanding of how informed the population is about nutrition assisted us in determining whether or not nutritional messaging is necessary. This study will be used to determine the

subject of future nutritional messages, the means in which they should be communicated and how they might impact adolescents and their families in terms of nutrition and health.

1. Introduction

The United Nations Food and Agriculture Organization (FAO) estimated that about 815 million people of the 7.6 billion people in the world, or 10.7%, were suffering from chronic undernourishment in 2016 (FAO, 2017). The number of undernourished people is largest in the continents of Asia and Africa and often the most vulnerable groups of people are women, infants, children and adolescents. In addition, poverty amplifies malnutrition as the poor struggle to eat nutritious meals and seek out healthcare services. The illnesses and weakness caused as a result of malnutrition further impacts agricultural productivity and slows economic growth, perpetuating a vicious cycle of poverty and illness.

The Global Hunger Index ranks India 67th out of the 80 nations with the worst hunger situation, a ranking that is below North Korea or Sudan (Save the Children, 2016). According to FAO estimates in ‘The State of Food Security and Nutrition in the World, 2017’ report, 190.7 million people are undernourished in India. This means that 14.5% of the population is undernourished in India. Indicators of malnutrition include stunting (being too short for one’s age) or wasting (weighing too small for one’s height). According to the report, 38.4% of the children aged under five in India are stunted, while 21% suffer from wasting. Malnourished children have a higher risk of death from common childhood illnesses such as diarrhea, pneumonia, and malaria. In addition, 51.4% of Indian women in reproductive age between 15 to 49 years are anaemic (FAO, 2017). Undernutrition is more common for children of mothers who are undernourished themselves than for children whose mothers are not undernourished. This signifies the

importance of proper nutrition for adolescents, especially girls, since they will be the mothers of the next generation.

Scheduled tribes (STs) comprise 8.2% of India's population and they mostly reside in forests and hilly terrains isolated from the other elite communities (India Census, 2011). In comparison with the greater India, this community has historically been subject to major social disadvantage and exclusion. Undernutrition is substantially higher in these tribal areas than in urban areas. This is due to the socioeconomic disadvantages, geographical and cultural characteristics of the tribal villages. The National Family Health Survey reported that ST children have the poorest nutritional status in the nation (NFHS, 2006). In 2007, a survey was carried out to assess the nutritional status of the tribal population in Khammam district of Andhra Pradesh. The survey revealed that among the adolescents (12–17 years), about 45% of boys and 21% of girls were undernourished (< 5th BMI centile) (Laxmaiah, 2007). Recognizing the special needs of the tribal villages, the Government of India has put into place several programs in order to alleviate poverty and abolish malnutrition. These programs include the Anganwadi centers which provide food rationing and educational resources to benefit infants, pregnant women, lactating mothers and adolescent girls. However, in recent years the focus of these government programs have shifted to focus on children and the rationing program for adolescents has been stopped. This leaves this particular age group to be even more vulnerable.

The following study is focused on adolescents in the tribal villages of Adilabad district in the state of Telangana and attempts to understand the current nutritional knowledge amongst tribal populations. This study also explores behavior change communication strategies in order to convey nutritional messages to the adolescents in hopes of eradicating malnutrition in this area.

2. Methodology

This project explores the linkage between the nutritional status of adolescents in the tribal villages and their knowledge and understanding of nutrition. This study is based on previous data provided by ICRISAT's Nutri-Food Basket baseline survey which revealed low dietary diversity scores, low hemoglobin levels and low BMI amongst adolescent girls in the villages of Utnoor Mandal in Adilabad District. Data was collected on the nutritional knowledge of adolescents, their teachers and parents to determine if lack of knowledge could be a factor of malnutrition. In addition, a nutrition message on dietary diversity was given to the adolescents in two different formats to note their understanding and which method of communication they preferred. All questions and instructions in FGDs and interviews were asked in English and translated to Telugu via a translator. A verbal consent script was read to ensure that all participants were aware of the purpose of the FGDs, individual interviews and messaging sessions and agreed to be a part of it (appendix A). Additionally, consent was taken before any photographs were taken.

2.1 Source of Secondary Data

The ongoing "Nutri-Food Basket" project baseline survey studied the food security, food consumption, nutrition and wellbeing of tribal villages of Utnoor mandal. This survey revealed through BMI, hemoglobin levels and dietary diversity scores that there was a prevalence of malnutrition amongst adolescent girls. However, food resources are readily available in this area,

which indicates that there is a greater factor contributing to malnutrition. The data collected as a part of the “Nutri-Food Basket” project was analyzed and used as a basis for this project.

2.2 Primary Data

2.2a. Focus group discussions (FGD)

Focus group discussions were conducted with the adolescents to collect qualitative and quantitative data that would assess the participants’ current understanding of nutrition. Purposive sampling was used to select the participants for these discussions. A total of four focus group discussions were conducted in the Lakkaram and Shyampur villages of Utnoor Mandal. Three of the discussions had single-gender participants where as the fourth one was mixed. Participants consisted of adolescents between the ages of 11-18 that were either school-going or had dropped out. All participants were residing at home with their families. The purpose of these focus group discussions was to assess the existing knowledge on nutrition amongst these adolescents, to understand their current nutritional practices and search for ways to send them nutritional messages. All focus group discussions lasted around thirty minutes. The questionnaire consisted of eighteen questions in that fall in the following categories: demographic questions, personal perspectives on nutrition and messaging, availability of media and nutrition practices within the household (appendix B). One of the questions asked participants to identify their diet diversity by indicating which foods they consumed the most from the nine FAO food groups. Each participant was given 10 beans and told that each bean represented 10% of their regular diet. Participants were then asked to place the beans on a chart including all nine food groups according to what they consumed the most of on a daily basis (appendix C).

2.2b. Key Informant Interviews

Along with the focus group discussions, a total of eight individual interviews were conducted with teacher and parents of adolescents in Lakkaram and Shyampur villages. Four of the interviews were with parents of adolescents between 11-18 years of age, three were mothers and one was a father. Two school teachers that taught science to adolescents were interviewed, as well as two anganwadi teachers. Anganwadi teachers are those that are hired by the government of India to run anganwadi centers which serve as a basic health care and child care centers. Anganwadi teachers interact specifically with children, pregnant women, lactating mothers and adolescent girls. The purpose of these interviews was to determine the parents' and teachers' knowledge on nutrition, the adolescence period and which types of nutritional messages they were conveying to the adolescents. Purposive sampling was used to select parents of current adolescent children and teachers that worked directly with adolescents. Each of these interviews lasted between ten to twenty minutes. The questionnaires consisted of around twenty questions depending on the responses given. These questions focused on demographics, personal perspectives on adolescence nutrition and messaging, availability of media and nutrition practices within the households (appendices D,E).

2.2c. Nutritional Messaging

The first portion of this study aims to assess the knowledge of adolescent nutrition in the tribal villages. The second portion explores how nutritional messages can be conveyed to increase the understanding of nutrition especially amongst adolescents. A nutritional message was given to a sample of sixty adolescents, thirty from each village. Purposive sampling was used to pick thirty boys and thirty girls between the ages of 11-18. The topic of dietary diversity was chosen for the

nutritional messages which was given in the format of an information pamphlet and a traditional folklore song. Dietary diversity was selected specifically due to the results of the Nutri-Food basket baseline data which revealed low diet diversity scores, low hemoglobin levels as well as a prevalence of being underweight. Since Utnoor mandal is rich with food resources, this nutritional message was created in hopes that the adolescents will become aware and make use of these resources. The information pamphlet was made with a combination of pictures and words so it would be easy to visualize for all age groups (appendix F). Due to the popularity of folklore songs and oral renditions in these tribal villages, the audio nutritional message was made in the form of a folklore song (appendix G). Both the pamphlet and audio song were written in English and translated into the local language of Telugu. The pamphlets were given to the adolescents with no prior introduction of the topic. After reading individually for five minutes, two adolescents were selected randomly to read out loud so we could assess the comprehension level. Immediately after, the folklore song was played twice so that the subjects could understand the message. The nutritional messages were followed by two different feedback forms. The first form consisted of four multiple choice questions to assess their understanding of the messages given. For each question, two pictures were shown and the participants were asked to pick which they agreed with. The first question showed two meals and asked which one was more diverse. The second question showed progression of age and asked which one included adolescence age. The third question showed two families and asked which one represented a healthy generation. While the fourth question didn't directly assess the understanding of the message, it served as a way for us to understand their perceptions of themselves. The question showed a group of children that appeared malnourished and a group of children that appeared to be healthy and

asked which category the participants felt they belonged to (appendix H). The second feedback form was a qualitative assessment of the nutritional messages. This form asked what the participants learned, which method of communication they preferred and which other methods they would like to see in the future (appendix I).

2.3 Limitations of the study

Time was the greatest barrier to conducting a more inclusive and complete study. Given more than two months, this study would include a more intensive nutritional messaging sessions that test a variety of communication methods and assess any behavior changes that occurred due to the messages. A longer period of time would be given for the nutritional messages and a larger variety of topics would be covered. Additionally, the study would include other villages and target school-dropout adolescents as well as adolescents residing in hostels away from home. There would also be a greater sample for the purposes of a more complete data collection. Another limitation of the study was the language barrier. As an interviewer, I had to rely on a translator in order to gather data. There is no way to ensure that my questions were translated in such a way that the participants would understand them as I had intended.

Furthermore, availability of participants was a limitation. For example, the timing of the interviews made it difficult to reach school-dropout adolescents since many of them went to work during the day. Likewise, many teachers were teaching during the day so we simply interviewed those who were available, regardless of the subject they taught.

3. Results and Discussion

This analysis focuses on the outcome of the assessment of nutritional knowledge for adolescents, their parents and their teachers. In addition, the nutritional messaging feedback was assessed to determine the effects of the message and how it can be improved in the future.

3.1 Descriptive Statistics of Utnoor Mandal

The baseline survey conducted as a part of the “Nutri-Food Basket” project collected information on 16 villages, 79 Anganwadi centers and 1710 households in the Utnoor mandal. The nutritional status of adolescent girls was determined using Body Mass Index calculations and the status of anaemia was measured by hemoglobin levels. This revealed that around 70% of the surveyed adolescent girls were underweight and around 33% were mildly anaemic.

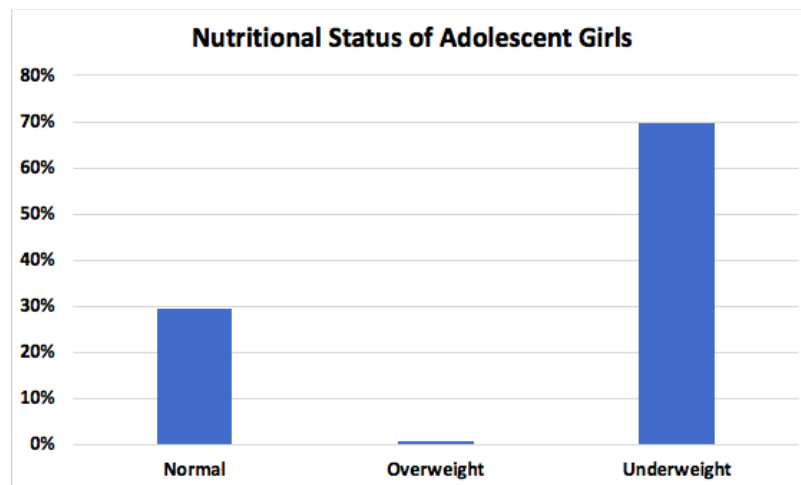


Figure 1: Nutritional Status of Adolescent Girls
Source: NFB Baseline Survey

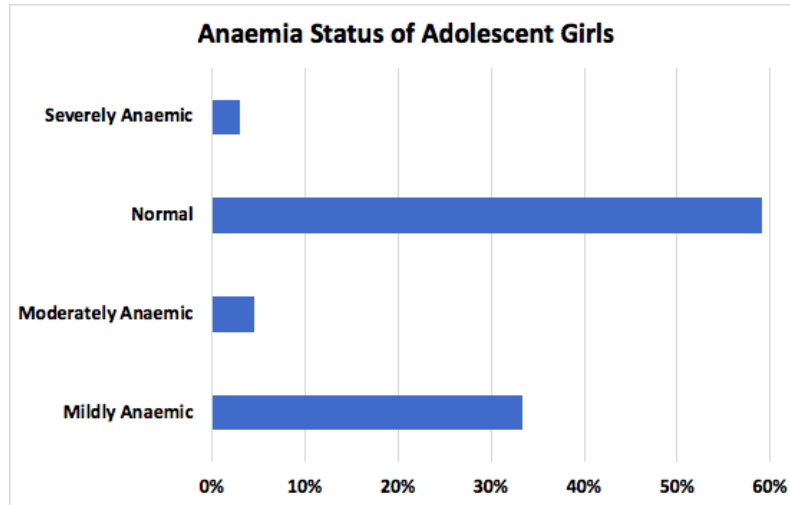


Figure 2: Anemia Status of Adolescent Girls
Source: NFB Baseline Survey

Additionally, data on the dietary diversity scores of adolescent girls was calculated using the nine food groups as directed by the FAO guidelines (FAO, 2010). A high dietary diversity score indicates that more than five food groups are consumed on a normal day. A low dietary diversity score means that only up to three food groups are consumed where as a medium score falls between four to five food groups consumed. The survey showed that the majority of adolescent girls had medium dietary diversity scores and very few adolescent girls had high dietary diversity scores.

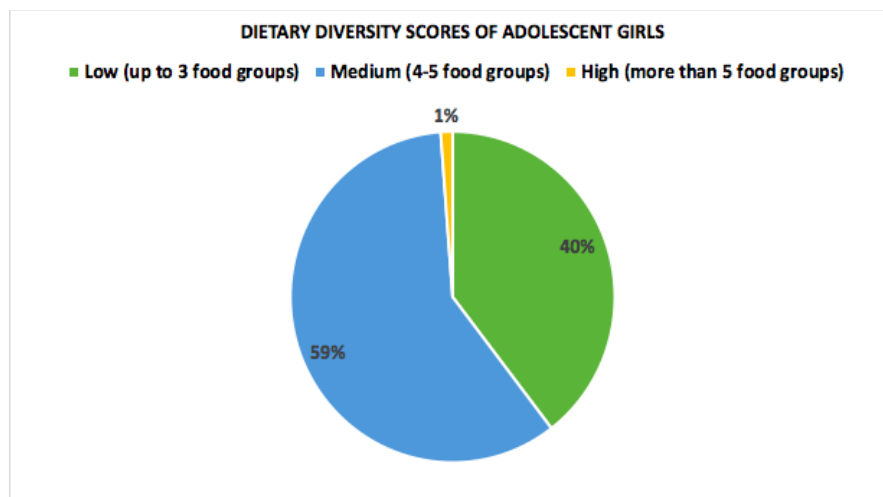


Figure 3: Dietary Diversity Scores of Adolescent Girls
Source: NFB Baseline Survey

In order to determine the role of socioeconomic statuses in the nutritional status of adolescent girls, sixty-two households from the Lakkaram village were assessed. The households had annual incomes ranging from -50,000 rupees to 80,000 rupees, yet the majority of adolescent girls from all the households were malnourished. Within the low-income group, around 60% of the adolescents were malnourished while around 80% and 70% were malnourished in the middle and high income groups respectively. This data shows that malnutrition is prevalent even amongst those who are financially stable enough to make nutrition a priority, further emphasizing the need for nutritional messaging (ICRISAT, 2017).

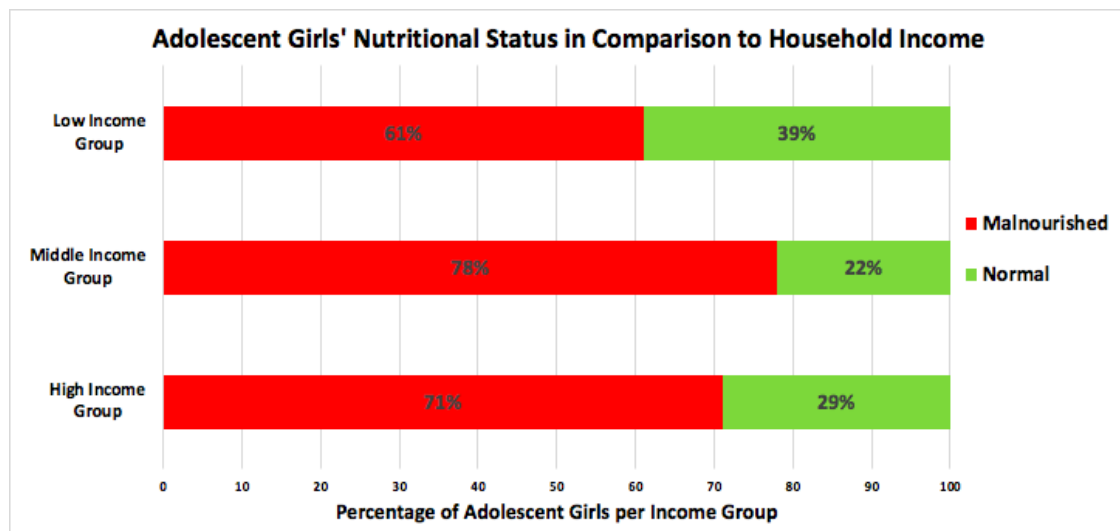


Figure 4: Nutritional statuses per household income levels
Source: NFB Baseline Survey

3.2 Assessment of Nutritional Knowledge

3.2a. Adolescents

The four focus group discussions conducted with forty-eight adolescents provided with both quantitative and qualitative data that explores the current nutritional knowledge of adolescents as well as their food consumption habits. Of the forty-eight participants, 79% claimed that they had heard of nutrition previously. However, when asked to define nutrition, the participants simply

listed different food groups and nutrients. When asked which foods contained energy, vitamins or proteins, none of the four FGDs were able to properly categorize the different foods according to their nutrients. When asked to identify their dietary diversity, only 8% of the participants claimed that they regularly consumed food from all the nine FAO food groups. 35% of participants claimed to consumed from seven different food groups regularly, making it the most common number of food groups consumed regularly. The most commonly consumed food groups were grains, legumes, oils, and vegetables.

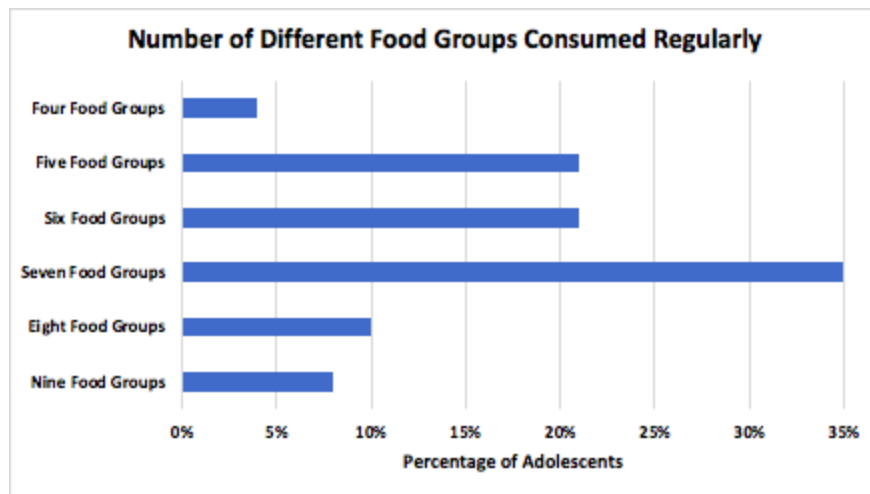


Figure 5: Number of Different Food Groups Consumed Regularly

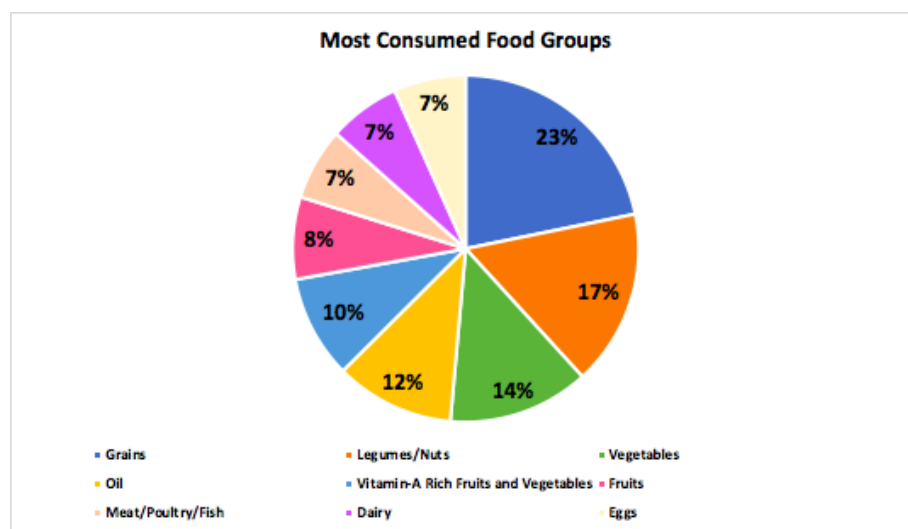


Figure 6: Most Consumed Food Groups

When asked about the importance of adolescent nutrition, 100% of the participants believed that nutrition was important for adolescents and that both the quantity and quality of foods should increase during this time. However, only one FGD was able to identify specifically that the adolescent age was a unique growth period, making nutrition during this time particularly significant. For the purposes of future nutritional messaging, the participants were asked about the availability of different media and technologies. 92% of participants said that they had access to T.V. within their households and 79% had access to smartphones by which they could reach the internet. This discussion also revealed that while most adolescent boys had their own cell phones, all of the adolescent girls said that they borrowed their parents' or brothers' cell phones for use. Very few participants said that they had access to newspapers and radio. The participants were also asked if they received nutritional messages throughout any of these outlets. A few mentioned that they watch food and health shows on the ETV Life channel. Other than that, the participants conveyed that they received most of their information about nutrition from their parents and teachers. 100% of the participants said that their parents encouraged them to eat fruits and vegetables often. Most also mentioned that teachers encouraged them to eat different foods especially during the mid-day meals provided at school.

3.2b. Parents

In both Lakkaram and Shyampur villages, two interviews were conducted with parents of adolescents, for a total of four interviews. At the beginning of each interview, the parents were asked to define nutrition. All four of the participants could not define nutrition, mention which nutrients were contained in certain foods or the functions of any nutrients. However, all of the respondents claimed that food played a large role in a child's development and that adolescents

should be fed larger quantities of food as they grow. Two of the parents were able to specifically identify the significance of the adolescent age, claiming that it was a time for great mental and physical development. To further understand their perceptions of food and nutrition, the parents were asked to recall what kinds of foods they consumed as adolescents and if their children consumed these same foods. Two of the parents stated that their children's diets were drastically different from their diets as adolescents because they had consumed foods such as hare, iguanas, deer meat, wild boar, porcupines, peacocks, crocodiles, tortoise, fish, wild fruits, roots and tubers. It is now illegal to hunt most of these forest animals, so their children eat the locally grown food. The two other parents claimed that they consumed the same foods that their children now consume such as sorghum rotis, rice, vegetables, chicken and eggs. When asked whether or not they teach their children about nutrition, all of the parents said that while they don't talk specifically about nutrition, they do advise their children to eat what they believe to be good foods which were mostly fruits and vegetables. For the purpose of nutritional messaging, the parents were asked about the availability of media and technologies. 75% of the parents said they had access to T.V. in their households, 100% of the parents had access to a cell phone either by themselves or through their children, only 25% had access to internet and social media through their cell phone. Finally, the parents were asked in what ways they would like to see nutritional messages conveyed to their children in the future. Three of the parents mentioned communication methods such as personal interactions, books, peers and T.V. One of the parents said that nutritional messages are not necessary and that the adolescents should simply work hard to eat whatever is available in the area.

3.2c. School teachers

One teacher was interviewed from each school in Lakkaram and Shyampur, for a total of two interviews. Although the respondents were selected randomly, they both happened to teach science to students in 6-10 standard. Both of the teachers were able to appropriately define nutrition, claiming that different nutrients such as carbohydrates, proteins, vitamins, and minerals should be consumed in balanced amounts. Additionally, both teachers were able to tell the significance of the adolescence age and claimed to teach this to their students, especially in terms of nutrition. In both schools, the 7th and 10th grades have an expanded lesson on nutrition as part of the science curriculum. In these lessons, the teachers give examples of which foods in the students' typical diets give certain nutrients such as vitamins, carbohydrates, etc... Models, charts and posters are used to enhance the lesson and help the student visualize the information they learn. Both teachers mentioned that while they advise their student to eat diverse foods, affordability is a big barrier for most households because the families often cannot afford to regularly purchase a variety of foods and are forced to eat just staple foods. The teachers were asked about the availability of media and technologies for nutritional messaging purposes. Both of the schools had access to T.V. but neither had access to the internet. However both teachers had personal smartphones which they claimed they use for educational purposes. The teachers show youtube videos, and articles mainly focused on health but not specifically nutrition. One teacher showed nutritional messages once a week that talked about the benefits of specific vegetables, and how to prepare and consume them. The message appeared as a picture of the vegetables along with short paragraph. The teacher also revealed the existence of a WhatsApp group amongst Adilabad district teachers where they can exchange educational materials. When

asked about nutritional messages in the future, the teachers suggested sending messages through videos, models of food, folklore songs, booklets, and T.V. Furthermore, one teacher stated that nutrition should be added to the school curriculum as a compulsory class on its own.

3.2d. Anganwadi teachers

In addition to the two school teachers, two anganwadi teachers were also interviewed because of their direct contact with adolescents, specifically girls. When asked to define nutrition, both of the teachers failed to define it but mentioned a packet called Balamrutham which is a preparation of wheat, chana dal, milk powder, oil and sugar that is used specifically to provide more nutrients to children and mothers. Both teachers claimed that adolescents approached them with questions concerning hygiene, illness, menstrual pains and medications, especially during the monthly meetings with adolescent girls. Additionally, there is a nutrition week held annually. However, the topic of discussion at this program is often focused on hygienic practices rather than nutrition. Neither of the teachers claimed to teach the adolescents specifically about nutrition. Both anganwadi teachers believed that nutrition was important for adolescents and mentioned that the adolescent age was especially important because it was a period for growth and development and that today's adolescent girls would be the mothers of the next generation. One teacher specifically stated that in the villages, children's nutrition is emphasized whereas adolescents' nutrition is not as the government's rationing programs for adolescents were stopped five years ago. When asked about access to media, the teachers mentioned that most adolescents had access to T.V. in their households. Most of their nutritional messages came from posters and booklets. While both of the teachers had access to cell phones, they claimed that they only used it for the purposes of communicating with their supervisors and other teachers. When

asked about the other ways in which adolescents should receive nutritional messages, one teacher said that meetings were the only way to reach the adolescents. The other teacher suggested first establishing a relationship with the adolescents in the village by personal interaction. Then, print media should be posted in the hospitals, schools, the Gram Panchayat office and around the village to convey the nutritional messages.

3.3 Results of Nutritional Messages

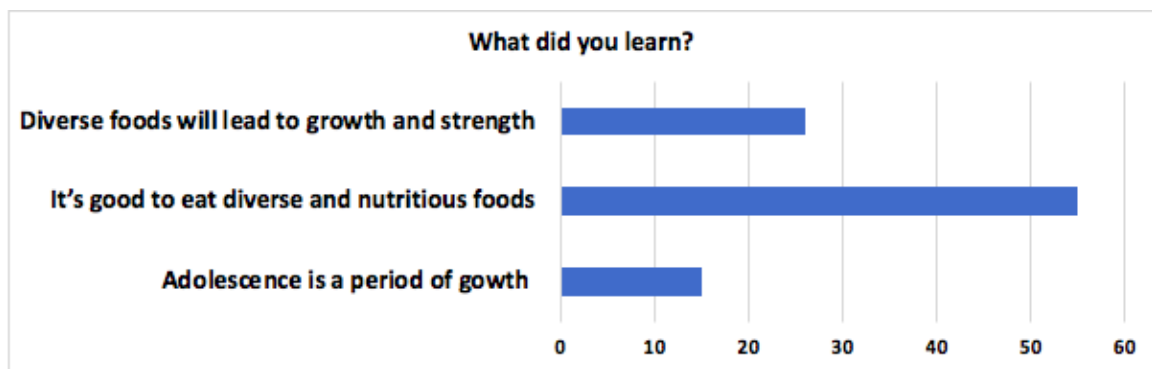
3.3a. Understanding of message

Nutritional messaging sessions were held once in each village. The first feedback form assessed whether or not the participants understood the message as intended. The first question showed a picture of a plate of rice and dahl and another picture with a plate full of different foods and asked which was more diverse. 92% of participants selected the correct picture. The second question showed two pictures of age progression, one of which was missing the adolescent period. 78% of participants were able to correctly identify which picture included the adolescent age. The third question showed a family eating just rice and dahl and another picture of a family cooking a variety of foods. Participants were asked which picture showed the trend of a healthy generation. 75% of the participants believed that neither picture represented a healthy generation, whereas 12% selected the correct answer. Lastly, participants were shown a picture of malnourished adolescents as well as healthy adolescents and asked which group they felt they belonged to. 65% of participants identified themselves as a part of the malnourished adolescents. When analyzing these results, it is important to keep in mind that there is a limitation concerning the feedback forms used for assessment of understanding from the nutritional messages. In order

to avoid bias in the answers, the multiple-choice questions were given in the form of pictures. However, there is no way to ensure that the participants perceived the pictures as I intended.

3.3b. Insights on messages

The second feedback form was used to determine the participants perspectives on the given nutritional messages. The three basic ideas conveyed in the nutritional messages was the significance of adolescence, the value of nutritious foods and the benefits of eating diverse foods. When asked to state what they learned, 92% of participants mentioned value of nutritious foods, 43% mentioned the significance of adolescence and 25% stated that diverse foods would lead to growth and strength.



*Participants could give more than one answer

Figure 7: Assessment of nutritional message understanding

Additionally, 75% of the participants thought the nutritional messages were useful and 61% preferred the audio message over the pamphlet.

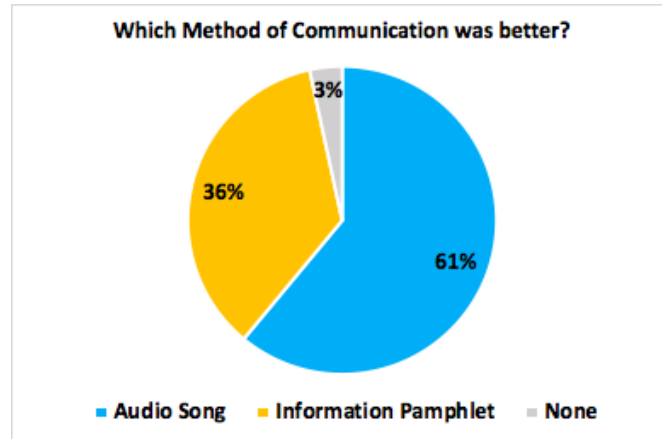


Figure 8: Preference of messaging communication method

For the purposes of future nutritional messages, the participants were asked which other communication methods should be used, where nutritional messages should be placed and who should give them. The most common communication method mentioned were posters and visuals. The most common location for the nutritional messages was around the village and teachers were the preferred communicators for the messages.

3.4 Conclusion, recommendations and way forward

3.4a. *Assessment of knowledge*

The FGDs and individual interviews conducted revealed that there is a great lack in nutritional knowledge amongst adolescents, their parents and their anganwadi teachers. However, the school teachers interviewed displayed a greater understanding of nutrition and the period of adolescence. Evidently, there is a divide in the education system because the teachers' levels of knowledge does not in anyway reflect what the students are aware of in terms of nutrition. One of the reasons for this might be because information learned in the classroom isn't seen as practical by the students and not applicable to their own lives. In order to ensure that this does

not happen, lessons on nutrition need to be taught in such a way that makes it relatable to the students by using their typical diets as examples of how certain nutrients can be consumed.

The data collected ensured that lack of knowledge about nutrition was a factor of the prevalence of malnutrition in the area. In addition, affordability also came up many times as another barrier to eating a diverse diet. While nutritional messaging may not directly affect the issue of affordability, creating an awareness will make nutrition a priority for families once they are in a position of financial stability.

3.4b. Nutritional messaging

The results from the feedback forms showed that the adolescents were able to understand the nutritional message after reading the pamphlet for only five minutes and listening to the song twice. This indicates that given a greater amount of time and a more complete message, a larger number of the adolescents would comprehend all aspects of the message. Additionally, the nutritional messages would be more effective if presented in a manner that is appealing to the adolescents. In this study, 61% of messaging participants preferred the audio message over the pamphlet. Furthermore, posters, charts and visuals were the most commonly recommended forms of messaging for the future. If these preferences and suggestions are taken into consideration when preparing future nutritional messages, the adolescents will be able to have a greater understanding of nutrition and especially why their period of life is so unique. Aside from nutritional messaging, nutrition should also be taught as a mandatory class in schools and should be discussed at the anganwadi centers. However, this also calls for the proper training of school teachers and anganwadi workers. While the two school teachers we spoke with were well aware of nutrition, this is not always the case in the tribal villages. For example, after finishing data

collection at Lakkaram and Shyampur, we visited a residential school in the village of Luxettipet to simply observe any differences. When we asked the adolescents about nutrition, we learned that nutrition was actually the first lesson covered in their science classes, yet no one was able to define nutrition. What was more surprising was the inability of the residential school science teacher to answer the question himself or guide his students so that they could answer the question. Due to the variety of tribal languages, most schools hire teachers who are fluent in the different tribal languages. These teachers are often natives of the tribal villages and grew up in the same conditions that the adolescents are now growing up in. Therefore, we cannot expect these teachers to have the capacity to teach their students about nutrition if they grew up in the same conditions and were not properly trained on nutrition themselves. This is also true for anganwadi teachers and helpers. With adequate training and guidance, the school teachers and anganwadi workers will be better able to convey the nutritional messages and affect the way in which adolescents consume nutrients.

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Appendix A

A Study on Nutritional Messaging for Adolescents in Adilabad, Telangana, India

Verbal Consent Script

Thank you for the opportunity to speak with you. We are a research team from ICRISAT in Hyderabad. We are conducting a survey to learn about agriculture, food security, food consumption, nutrition and wellbeing of households in this area.

You have been selected to participate in an interview that includes questions on topics such as food consumption and nutrition of adolescent girls and boys. The survey includes questions about your individual dietary intake, and questions about the dietary intake of adolescents within your household.

These questions in total will take approximately 30 minutes to complete and your participation is entirely voluntary. If you agree to participate, you can choose to stop at any time or to skip any questions you do not want to answer.

Your answers will be completely confidential; we will not share information that identifies you with anyone. After entering the questionnaire into a database, we will destroy all information such as your name which will link these responses to you.

Appendix B

A Study on Nutritional Messaging for Adolescents in Adilabad, Telangana, India

Focus Group Discussion questionnaire for adolescents aged 11-18 years old

- A. Group identification(girls, boys, mixed):
- B. # of adolescents:
- C. # residing at home:
- D. # residing in hostels:
- E. # attending school:
- F. # not attending school:

Questions:

1. [icebreaker] **How do you define nutrition?**
2. **How diverse is your diet?**
 - a. **Ten beans given to each participant. Ask participants to place certain number of coins on each food group chart depending upon quantity of that food they usually eat.**
3. **Use food group charts to identify which foods provide: energy, vitamins and protein**
4. **Is nutrition important for adolescents? If yes or no, why?**
 - a. **In comparison to other age groups?**

- 5. Do you believe that you should eat more during adolescent years? (increase in quantity and quality)**

- 6. Do you have access to media? (radio, newspaper, t.v., etc...)**
 - a. How about social media? Which networks do you use and for what purpose?**

- 7. How many of you have access to a cell phone?**
 - a. How do you use your cellphone?**

- 8. Do you learn about nutrition?**
 - a. In what ways? Ex. Parents, teachers, posters, magazines, newspapers, radio, T.V., none of the above**

- 9. When you have a question concerning health or nutrition, who do you ask?**
 - a. Do you talk about health or nutrition among your peers?**

- 10. How often does a family member and/or teacher encourage you to eat vegetables and fruits?**
 - a. Often, Sometimes, Rarely, Never**
 - b. Why?**

- 11. How often does a family member and/or teacher discuss food and nutrition with you?**
 - a. Often, Sometimes, Rarely, Never**
 - b. Why?**

12. What do you think is the most effective method to receive nutritional messaging?

Ex. cell phone, radio, newspaper, parents, teachers, etc...

13. Who is responsible for deciding what you eat? Ex. Mother, Father, Myself

Appendix C

A Study on Nutritional Messaging for Adolescents in Adilabad, Telangana, India

FAO Nine Food Groups Chart



Appendix D

A Study on Nutritional Messaging for Adolescents in Adilabad, Telangana, India

Personal interview questionnaire for parents with adolescents ages 11-18 years old

A. Name of interviewer:

B. First and last name of respondent:

C. Age of respondent: _____

D. Gender: M F

E. Caste /class of respondent:

F. Highest level of education of respondent: _____ standard

G. Source of income: Formal sector Informal sector Unemployed

Other

H. Monthly/Annual family income: Rs. _____

I. Type of family: nuclear joint

J. Number of children: Male _____ Female _____

K. Number of children between ages of 12-18: _____

L. List children:

Name	Age	Gender

Village and district name:

Questions:

1. [icebreaker] How do you define nutrition?

2. Do you make decisions regarding your children's health and nutrition?

YES NO

If yes, please describe some decisions you have made.

If no, who makes these decisions?

Regardless of answer, why?

3. Is there a difference in how the male and female children in your household are raised? (For example, if sons/grandsons fall sick, where do you take them? What about daughters/granddaughters? Are there special diets for different kids?)

YES NO

If yes, describe.

4. If your children have questions or concerns about health and nutrition do they talk to you?

YES NO

If no, who do they talk to?

Regardless of answer, why?

5. Is nutrition for adolescents important ?

YES NO

Regardless of answer, tell us what you know about adolescent nutrition.

6. A. What foods did you eat when you were an adolescent?

B. Are these the same foods that your children eat now?

YES NO

If no, what are the differences?

7. Do you teach your children about the importance of nutrition?

YES NO

If yes, what do you teach them?

If no, who do you think should be responsible for teaching them?

8. Do your children have access to media such as radio, newspaper and T.V.?

a. Do they have access to the internet or social media? YES NO

YES NO

If yes, do they receive any nutrition messages through media?

9. Do you have access to cellphones?

YES NO

If yes, how do you use it? Do you allow your children to use it?

10. In what other ways should your children receive nutrition messages?

Additional notes:

Appendix E

A Study on Nutritional Messaging for Adolescents in Adilabad, Telangana, India

Personal interview questionnaire for teachers of adolescents ages 11-18 years old

- A. Name of interviewer:
- B. First and last name of respondent:
- C. Age of respondent: _____
- D. Gender: M F
- E. Caste /class of respondent:
- F. Highest level of education of respondent: _____ standard
- G. Village and district name:
- H. Which class and subject do you teach? _____

Questions:

1. [icebreaker] **How do you define nutrition?**

2. **If your students have questions or concerns about health and nutrition do they talk to you?**
 YES NO
 If no, who do they talk to?
 Regardless of answer, why?
3. **Is nutrition for adolescents important ?**
 YES NO

Regardless of answer, tell us what you know about adolescent nutrition.

4. Do you teach your students about the importance of nutrition?

YES NO

If yes, what do you teach them?

If no, who do you think should be responsible for teaching them?

5. Do your students have access to media such as radio, newspaper and T.V. at school?

a. Do they have access to the internet or social media? YES NO

YES NO

If yes, do they receive any nutrition messages through media?

6. Do you have access to cellphones?

YES NO

If yes, how do you use it?

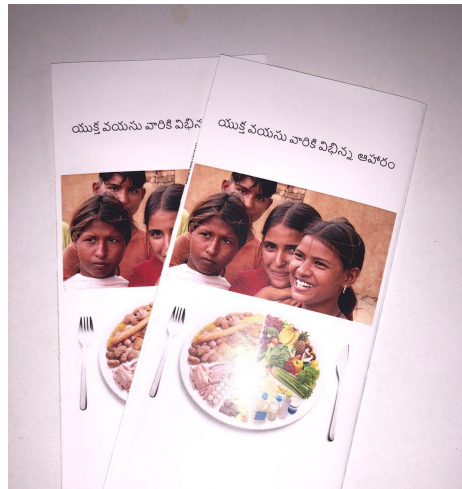
7. In what other ways should your students receive nutrition messages?

Additional notes:

Appendix F

A Study on Nutritional Messaging for Adolescents in Adilabad, Telangana, India

Nutritional Message Pamphlet



Adolescence (age 11-18) is the transition from childhood to adulthood.

11 13 15 18

During this time the body undergoes several drastic changes. A diverse diet is necessary for the body to grow during this time.

What is diet diversity?
A combination of macronutrients and micronutrients.

carbs

proteins

fats

Eating foods from all food groups results in adequate nutrition and growth.

↓

Diverse Diet for Adolescents



Eat diverse foods in order to...



grow into healthy adults...

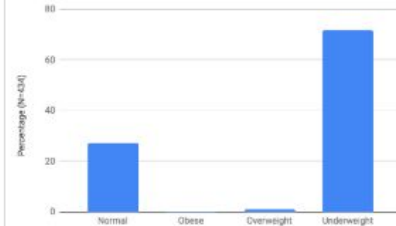


and continue this pattern for new generations.



Statistics

Body Mass Index of Adolescent Girls in Utnoor
NFBI Baseline Survey Data



Appendix G

A Study on Nutritional Messaging for Adolescents in Adilabad, Telangana, India

Nutritional Message Audio Song (English)

Chorus: Adolescence is the transition from childhood to adulthood
 Eat diverse foods with both micro and macronutrients
 Grow into healthy adults and continue for generations

Nature provides with different food groups
 During adolescence, you need diverse foods to grow
 Diverse foods are a combination of macronutrients and micronutrients
 To ensure a diverse diet, you should eat from all food groups

Chorus: Adolescence is the transition from childhood to adulthood
 Eat diverse foods with both micro and macronutrients
 Grow into healthy adults and continue for generations

Meals should include whole grains, vegetables, fruits, legumes and dairy
 Eating these foods will allow you to grow into a healthy adult
 Healthy adults will raise healthy children
 This pattern will continue for all the generations to come

Chorus: Adolescence is the transition from childhood to adulthood
 Eat diverse foods with both micro and macronutrients
 Grow into healthy adults and continue for generations

Appendix H

A Study on Nutritional Messaging for Adolescents in Adilabad, Telangana, India

Feedback questions:

Please choose the appropriate picture.

1. Which diet is more diverse?



OR



2. Which picture shows adolescent age?



OR



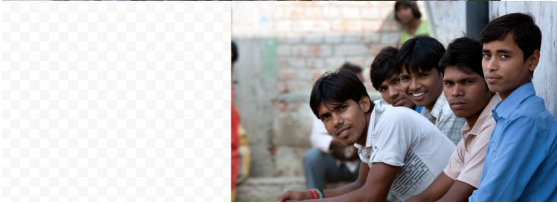
3. Which picture represents a trend of a healthy generation?



OR



4. According to you, to which category do you belong to?



OR



Appendix I

A Study on Nutritional Messaging for Adolescents in Adilabad, Telangana, India

Feedback questions:

1. What did you learn from the nutritional message and was it useful to you?

2. Which method of communication was better?

A. Information pamphlet

B. Audio

3. In the future what other form of communication would you like to see?