

Inside this Issue:

Update	1
Underweight and obesity	1
Children's take on food	2
Adolescent's food patterns: Going global	2
Grandmother's health perspectives	2
Children's activity and food habits	2
Doctors chime in	3
New study on Drivers of Food Choices (DFC) in Indian houses	3
DFC Project team	4
Collaborative visit from Colleagues in Atlanta, USA	5
Field Data Collection Glimpses	6
DFC Project team at ANH 2018 - 19 Conference	6
Students and Interns	6
Future directions: Dr. Shaikh's new award	7
Publications	7
Get Involved!	7
Acknowledgements	8



B.E. Impactful

A SOCIAL DETERMINANTS NEWSLETTER

UPDATE 2019 - 2020

HEALTH CHANGES IN VIJAYAPURA

India continues to experience high levels of under-nutrition, together with increasing levels of overweight and obesity. This dual burden of malnutrition is contributing to sustained levels of infectious and chronic disease. The emergence of obesity alongside underweight has been attributed to the 'nutrition transition', happening specifically changes in food availability, food choice and food intake occurring with urbanization and economic growth. Understanding the relationship between health and socio-economic environment in the context of globalization has been a focus of our Emory-BLDE collaboration over the past 8 years.

In this current issue, we first highlight the findings

from our 2012-2014 projects, that was established first through an NIH-funded training program and then supported by Emory University's Global Health Institute, Emory University's Global Field Experience Program and BLDE (Deemed to be University (DU)). Through collaborative projects since 2012 in Vijayapura, we have shown that, in this population, underweight affects 40% of adolescents aged 13-16 years, while obesity affects 40% of their mothers. In addition, we have shown that processed and packaged foods are increasingly available, but that consumption is still low. We have documented the sources of non-local, energy-dense foods in youths' diets and the ways in which youths

conceptualize of global and local food items.

Next, we also describe in this issue our new study on Drivers of Food Choice in Indian Households in the Context of the Nutrition Transition and the next steps of this collaboration including a new research collaboration and training of students from BLDE (DU) and visiting students from Emory University.



Dr. Shailaja S. Patil,
MD, BLDE (DU)



Dr. Solveig Cunningham,
PhD, Emory University

Underweight and obesity — double burden in Vijayapura

India faces a dual burden of increasing obesity and persistent underweight. In 2012, our study of 400 families in Vijayapura measured the weights of mothers and children ages 5-19 years. We found 11% of families experiencing a dual burden of underweight and overweight, as majority of the children had normal weight while majority of the mothers were overweight (26% overweight & 40% obese). The study 'Influence of Home Environment on Adolescent Unhealthy Weight was funded by a grant from National Institute of Health (NIH), USA.

Household member	Underweight (%)	Normal weight (%)	Overweight (%)
Girls	17	76	7
Boys	29	64	8
Mother	5	29	66

How do children and adolescents view foods in Vijayapura?

In another study, adolescents in Vijayapura believed non-traditional foods such as pizza, noodles, cold drinks, ice cream and cake were most prestigious along with non-local foods from both foreign countries and other regions of India. Adolescents identified curd, pulses, rice, roti, and holige as least prestigious or traditional foods. There was little overlap in the foods adolescents mentioned that they ate at home versus outside the home. This study was led by Amanda Maxfield, Ph.D, student at Emory University, during her summer practicum at BLDE University in 2014 (Maxfield et al. Ecology of Food and Nutrition 2016).

Adolescents also ascribed healthfulness and modernity to food and beverage items and were aware of their availability across supermarkets & kiraana stores. continuing to eat meals at home, but now snack with friends outside the home more frequently.

(Source: Maxfield A, Patil S, Cunningham SA. Globalization and Food Prestige among Indian Adolescents. Ecology of food and nutrition. 2016;55(4):341-364).



Going global — adolescents eating patterns

According to a study carried out by our team, adolescent eating patterns in Vijayapura reflect a combination of global or non-local and traditional foods and preferences. A total of 399 adolescents aged 13-16 years old who attended 3 private and 3 public schools in 2013 completed a nutrition survey. Adolescents' food intake can be compared to the recommended dietary guidelines.

The adolescents ate energy-dense food more frequently than recommended but ate fruit, vegetables and dairy less frequently than recommended. Girls reported more frequent consumption of global packaged and ready-to-eat foods, vegetables, and added oil/ghee to foods while boys reported more frequent consumption of eggs and street foods.

Healthy eating can be challenging for adolescents in the context of new and trendy packaged and processed foods. This study provided new insights on the eating patterns of adolescents. "As global foods continue to appear in low- and middle-income countries such as India, understanding dietary patterns and preference can inform efforts to improve dietary diversity and healthfulness of foods," commented team nutritionist and lead author Dr. Nida Shaikh, Assistant Professor, Georgia State University.

(Source: Shaikh NI, Patil SS, Halli S, Ramakrishnan U, Cunningham SA. Going global: Indian adolescents' eating patterns. Public Health Nutrition. 2016)

Grandmother's perspectives on changing context of health in India

We engaged ten grandmothers from Vijayapura to get their perspective on globalization and health. Grandmothers provided insights about the changing context of dietary patterns and family roles arising with globalization that may be contributing to the rise in chronic diseases. The grandmothers completed a structured questionnaire that consisted of 27 close-ended questions and 2 open-ended questions. Grandmothers were asked to describe and to compare characteristics of their current and past household, including details of eating, activity practices and daily tasks.

Grandmothers indicated that household chores and food preparation are less labor-intensive and time-consuming due to mechanization and the availability of prepared foods compared to a generation earlier. Families are more often eating food out, bringing prepared food home, and/or using ready-made food mixes. In addition, adolescents are continuing to eat meals at home, but now snack with friends outside the home more frequently

(Source: Cunningham S, Gloor S, Patil S. Grandmothers' perspectives on the changing context of health in India. BMC Research Notes. 2017)

Innovative 'snapshot' of private school children's physical activity and food habits

In an ancillary study led by visiting MPH students from Emory University, photo journals were used to explore children's perceptions of their food and activity habits in Vijayapura. A total of 30 boys and girls studying in 8th and 9th standard in July 2013 were given a Kodak disposable camera and a notebook for 4 days.

Children expressed interest in active pastimes such as sports and playing outside, learning and health, and indicated traditional, modern, local, and global influences in their lives. Some described how much they enjoyed their favorite sports. An eighth grade girl stated, "I have basket-ball net in my house I have taken this photo because I like basket-ball and I go to level in basket-ball."



This picture shows an adolescent girl eating her dinner in front of TV. We published an article on this study :

(Source: Staab, E.M., Cunningham Solveig A., Thorpe, S., and Patil, S.S. (2016). A "snapshot" of physical activity and food habits among private school children in India. Childhood. 23(4): 537-553).

Doctors chime in

We also conducted a study in which we explored physicians' perceptions on the development of overweight and how to manage it in the developing sectors of India in which underweight seems to be the established health problem among children as well as adolescents. Twenty-five physicians participated in this study by completing a semi-structured questionnaire which included 35 close-ended and 3 open-ended questions. The close-ended questions served to gain insight about causes of obesity, gender differences, and treatment options, while the open-ended questions investigated the fundamentally understood rationales for obesity.

Although physicians treated adolescents more for underweight than overweight, most acknowledged that overweight has increased in frequency over the past 5 years while underweight has been steadily decreasing. Due to risk factors such as urban dwelling, high socioeconomic status, male gender and parental obesity, physicians agree that overweight is increasing as a problem. Factors such as eating habits, activity levels, and certain environmental levels are also influential.

Most physicians do desire more training on treating patients for overweight as well as under-nutrition.

(Source: Patil, S.S., Ports, J., Yadavannavar, M. C., and Cunningham, Solveig A. (2016) Physicians' Perceptions about the Emergence of Childhood Overweight in India. *Journal of Krishna Institute of Medical Sciences University*. 5(1):37-44.)

Our New Study: Drivers of Food Choice in Indian Households in the context of Nutrition Transition

The goal of this 2018-20 project, funded by the Drivers of Food Choice (DFC) competitive grants program, is to quantify aspects of women's and men's food choices relevant for addressing the dual burden of malnutrition in India through data collection and analysis based in Vijayapura, a remote district in Southern India that globalization is just reaching. The objectives are to: 1) Quantify the importance of factors including price, satiety, taste, reputation, and subsidies as proximate drivers of food choice in the context of globalizing food markets; 2) Identify the conditions under which women and men select global vs. traditional foods and how variations in these conditions can alter selections; 3) Assess the role of the public distribution system (PDS) as a driver of food choices and its implications for intake and for advancing nutrition transition. In a representative sample of 265 urban and 222 rural households, we conducted interviews with women, men and youths. Data instruments included experimental methods to elicit drivers of food choice in different scenarios and to value PDS bundles and a food frequency questionnaire to measure intake and nutrition transition. We used quantitative and qualitative methods to explore gender differences and communication relating to food choices and food intake. The research has real-world applications and is sustainable. This project will generate data on food choices in a remote but urbanizing region in Southern India, on the key drivers of food choices within and across households, and on the implications of the PDS. More information about the study is available at

<https://www.driversoffoodchoice.org/research/project-descriptions/food-choice-in-Indian-households/>

Funded by :

This research has been funded by the "Drivers of Food Choice (DFC) Competitive Grant Programs, which is funded by the UK Government's Department for International Development and the Bill & Melinda Gates Foundation and managed by the University of South Carolina, Arnold School of Public Health, USA".



Study team practicing interviews



Pilot study data collection

Drivers of Food Choice Project Study Team

Principal Investigator

Solveig A. Cunningham, PhD, Msc.,

Associate Professor, Rollins School of Public Health, Emory University, Atlanta, GA, USA



Co-Principal Investigator

Dr. Shailaja S. Patil, M.D.,

Professor and Head, Department of Community Medicine, Sri B. M. Patil Medical College, BLDE (Deemed to be University (DU)) India.



Co-Investigators



Ashlesha Datar, PhD.,

Senior Economist, University of Southern California. Her research focuses on the influence of neighborhoods on obesogenic behaviors and obesity in families.



Nida I. Shaikh, PhD, RD

Assistant Professor, Department of Nutrition, Georgia State University, Atlanta, GA, USA.



Research Associate

Chandrika Doddihal, M.D.,

Assistant Professor, Department of Community Medicine at BLDE (DU).



Project Coordinator

Manjunath Marad, PhD

Scholar, Department of Community Medicine, BLDE (DU)

Collaborative Visit from Colleagues from Emory University, Atlanta, USA

Since the start of the new collaborative study in 2018, Dr. Solveig Cunningham visited BLDE (DU) twice. In November 2018, Dr. Cunningham participated in the inauguration of the new research study 'Drivers of Food Choice in Indian Households in the Context of the Nutrition Transition'. The study was inaugurated by the chief guest Dr. M S Biradar, Honorable, Vice Chancellor of BLDE (DU). She also trained field staff to administer the study consent and survey modules to study participants.

On a second visit in June 2019, Dr. Cunningham reviewed the project progress and visited the project field areas in rural Ukkali and urban Vijayapura City. She participated in the distribution of sports kits to school children in Ukkali Village.

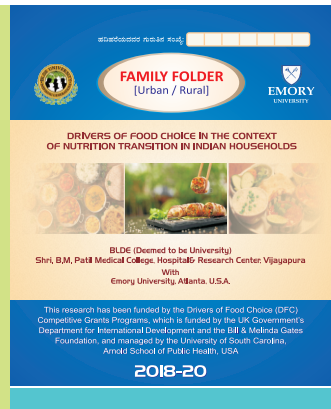


Inaugural Function, November 2018, BLDE (DU)



Principle Investigator with Project team November 2018, BLDE (DU), India

DFC FIELD DATA COLLECTION GLIMPSES



Interview with adolescent in rural school

Interview with Adolescent's Care taker (Urban)



Survey instrument cover file



Gift distribution at Ukkali



Distribution of Sports Kits in Schools, June 2019, Ukkali, India

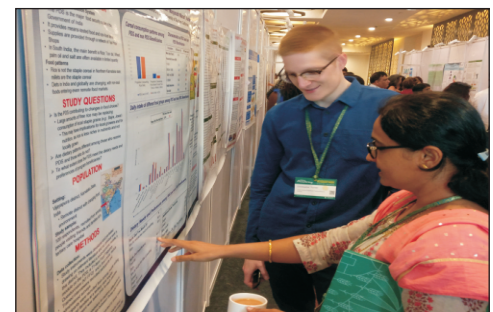


Interview at garden/farmhouse

DFC Study Team at the 2018 & 2019 Agriculture, Nutrition and Health Academy Week

Our team participated in the 3rd and 4th annual meetings of the Agriculture Nutrition and Health (ANH) Academy Week between 2018-19. In the 3rd annual ANH meeting in Accra, Ghana in 2018, Dr. Cunningham gave an oral presentation on 'Pocket money spending patterns among adolescents in India'. In the 4th annual ANH meeting in Hyderabad, India in 2019, using pilot data from a hospital-based sample of the ongoing DFC study, Dr. Cunningham gave an oral presentation on 'Understanding Food Choices in the Context of Globalizing Food Options' and Dr. Patil presented the poster 'The Public Distribution System as a Driver of Food Choice in Addressing Food Security and Food Diversity in Southern India.'

Other members of the DFC team, Dr. Doddihal and Mr. Marad, participated in learning labs at ANH 2019 that were designed to use DFC project case studies to engage participants in the science of food choice research that is used to identify leverage points from which programmatic and policy actions can be derived.



Dr. Patil with her poster, ANH 2019



DFC team at ANH 2019, Hyderabad, India

VISITING STUDENTS FROM EMORY UNIVERSITY, USA



Shifts in the food environment are considered a key driver of the nutrition transition in India. These shifts in the food environment maybe facilitated by environmental cues (nudges) in food retail stores but little is known about such nudges beyond western settings.

Atsu Ishizumi, an MPH student from Emory, participated in a summer practicum under the supervision of Dr. Shailaja Patil at BLDE (DU) from June to August 2018, where he developed and carried out an ancillary study titled 'Using nudge theory to understand the food retail environment of a globalizing South Indian city'. He conducted observational



audits in 17 food retails stores including local kirana stores and supermarkets in Vijayapura City and measured four nudges; items within reach of the cash register or waiting area; items visible from the front entrance; items placed at the average adult consumer's eye level, and shelf space allocation of different foods and beverages. Preliminary findings suggest, processed foods such as savory snacks and sweets were most frequently promoted through the four nudges irrespective of the type of food store.

In addition, Atsu updated the team's growing database of food items available in Vijayapura, which includes over 1000 foods and beverages, and assisted in the preparatory phase of the ongoing new 'Drivers of Food Choices in Indian Households in the context of Nutrition Transition' study.



Philip Dollard, an MPH student from Emory University visited BLDE (DU) for his summer practicum from July to August 2017. Under the guidance of Dr. Shailaja S. Patil, Phil participated in the preliminary fieldwork of the new ongoing study. His practicum was funded by the Global Field Epidemiology program at Emory University.

CURRENT STUDENTS & INTERNS

Asha Nadabar is a Master of Public Health student in the Hubert Department of Global Health at the Rollins School of Public Health. She is currently working with Dr. Solveig Cunningham and Dr. Nida Shaikh on the drivers of food choice in India project for her MPH Thesis.



John Pothan is a 7th year MD/PhD student at Emory University in the Sociology Department. John spent the summer (June to July 2019) in Vijayapura helping with analysis, study design and data management aspects of Drivers of Food Choice Project. He is currently helping with a manuscript examining sedentary activity and pedometer counts in adolescents and with a paper regarding temporary labor migration and diet.



Manjunath Marad is a PhD student in the Department of Community Medicine (Allied Health Sciences) at BLDE (Deemed to be University), Shri B M Patil Medical College, Hospital and Research Centre, India. He is the Project coordinator of the ongoing study 'Drivers of Food Choices in Indian Households in context of Nutrition Transition' funded by the Drivers of Food Choice (DFC) competitive grants program. His dissertation is titled 'Dietary patterns and determinants of food choices in the context of nutrition transition' and is being supervised by Dr. Shailaja S Patil, Professor and Head of the Department of Community Medicine at BLDE (Deemed to be University).



Future Directions:

Dr. Shaikh Receives an Award from 2019 Academy of Nutrition and Dietetics Foundation



Dr. Nida Shaikh, Assistant Professor of Nutrition at Georgia State University, has been awarded the 2019 Amy Joye Memorial Research Award by the Academy of Nutrition and Dietetics Foundation to test a nutrition instrument called the Nutrition-Transition Food Frequency Questionnaire for adults in Southern India. Nutrition transition, the shifts in dietary patterns accompanying globalization and urbanization, are believed to be contributing to the emergence of chronic diseases such as obesity and diabetes among adults in low- and middle-income countries including India. Unfolding of the nutrition transition among adults could be measured by assessing dietary changes, but to date there are no validated dietary assessment instruments for adults. As part of the larger ongoing 'Drivers of Food Choice' (DFC) study at BLDE (DU), which seeks to understand the drivers of food choices and food intake among Asian Indian adults in the context of nutrition transition, Dr. Shaikh and colleagues at BLDE (DU) and Emory University have developed the 71-item NT-FFQ. She will test the NT-FFQ over the next year for its reliability and validity. A validated NT-FFQ would be the first tailored dietary assessment instrument to measure nutrition transition among Asian Indian adults. Further applications of this instrument would include use in research and practice.

List of Recent Publications

1. Ilana G. Raskind, PhD, Shailaja S. Patil, MD, Nikhil Tandon, MBBS, MD, PhD, Sharanya Thummalapally, MPH, Michael R. Kramer, PhD and Solveig A. Cunningham, PhD. "Household Chores or Play Outdoors? The Intersecting Influence of Gender and School Type on Physical Activity Among Indian Adolescents". Health Education & Behavior. 2020;1-10. (Article first published online: June 9, 2020)
2. Ilana G Raskind ,Shailaja S Patil, Michael R, Kramer Solveig A Cunningham. "Physical Activity Pattern among Indian Adolescents: Independent & Joint Association of Gender & Socio-Economic Status". American Heart Association EPI| Lifestyle, 2019; 139,Page No. 322, conference abstract published Online.
3. Ilana G. Raskind, Shailaja S. Patil, Regine Haardorfer, Solveig A. Cunningham. Unhealthy Weight in Indian Families: The Role of the Family Environment in the Context of the Nutrition Transition. Population Research and Policy Review.2018; 37 (2): 157-180.
4. Shaikh NI, Maxfield A, Patil S, Cunningham S. Healthfulness, Modernity, and Availability of Food and Beverages: Adolescents' Perceptions in Southern India. Ecology of Food and Nutrition. 2017;1-17.
5. Shaikh NI, Frediani J, Patil SS, Ramakrishnan U, Yount KM, Martorell R, Narayan KM, Cunningham SA. Development and evaluation of a Nutrition Transition-Food Frequency Questionnaire for adolescents in South India. Public Health Nutrition. 2017;20(7):1162-1172.
6. Cunningham S, Gloor S, Patil S. Grandmothers' perspectives on the changing context of health in India. BMC Research Notes. 2017; 10(1).
7. Halli S, Ramakrishnan U, Cunningham SA. Going global: Indian adolescents' eating patterns. Public Health Shaikh NI, Patil SS, Nutrition. 2016;19(15):2799-2807.
8. Shaikh NI, Frediani J, Ramakrishnan U, Patil S, Yount K, Cunningham S. Development and Evaluation of a Nutrition Transition FFQ for Adolescents in South India. The FASEB Journal. 2016; 30(1): 1153.
9. Shaikh, N, Ramakrishnan, U, Patil, S, Yount, K, Martorell, R, Narayan, KM., & Cunningham, S. Development and Validation of a Nutrition Transition-Diet Score for Adolescents in India. The FASEB Journal, 2016. 30 (1 Supplement), 43.7.
10. Shaikh, N, Patil, S, Ramakrishnan, U, Yount, K, & Cunningham, S. Development and Evaluation of a Food Behavior Survey to Assess Nutrition Transition Among Adolescents in South India. The FASEB Journal, 2016. 30 (1 Supplement), 33.7.
11. Staab, E.M., Cunningham, Solveig A., Thorpe, S., and Patil, S.S. (2016). A "snapshot" of physical activity and food habits among private school children in India. Childhood. 23(4): 537-553.
12. Maxfield, A. Patil, S. and Cunningham, Solveig A. (2016) Globalization and Food Prestige among Indian Adolescents, Ecology of Food and Nutrition, 55(4): 341-364.
13. Patil, S.S., Ports, J., Yadavannavar, M. C., and Cunningham, Solveig A. (2016) Physicians' Perceptions about the Emergence of Childhood Overweight in India. Journal of Krishna Institute of Medical Sciences University. 5(1):3744.
14. Shaikh N, Maxfield A, Ramakrishnan U, Patil S, Cunningham S. Perspectives of Food Availability, Healthfulness and Modernity Among Adolescents in India. FASEB Journal, 2015. 29: 898.30.
15. Shaikh N, Patil S, Ramakrishnan U, Cunningham S. Food consumption of Indian adolescents in a globalizing world. The FASEB Journal, 2014. 28 (1 Supplement), 1014.5.

Interested in working with us/learning more? Contact us @

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USA: Dr. Solveig A. Cunningham, PhD. Associate Professor, Department of Global Health and Sociology, Emory University, Atlanta, GA, USA. **Email:** sargese@emory.edu

What are social determinants?

The social determinants of health are the economic and social conditions including those in which people are born, grow, live and work that influences their health status and risk for disease.

Supporting hands for Extending works in Centre for Social Determinants of Health at BLDE(DU)

Our previous projects were among the initial steps in developing center for Social Determinants of Health. The goal of this center is to both understand the emerging health challenges in our changing world and to work with leaders in our community and more broadly to develop effective ways for ensuring a healthy future for the underdeveloped region Northern Karnataka.

To further strengthen our center and invest in understanding the social determinants of nutrition in our community in terms of food choices made and also various factors influencing the choices, a new study was taken up.

This collaborative research journey would not have been possible without the support of our Honorable Chancellor **Dr. M. B. Patil**, Present Hon. Vice-Chancellor **Dr. M. S. Biradar** and Dean faculty of Medicine **Dr. Aravind V Patil**.

We express our gratitude to previous administrators **Dr. B G Mulimani** (Ex-Vice-Chancellor) & Ex-Dean's **Dr. R.C. Bidari**, & **Dr. S. P. Guggarigoudar** for their guidance and support in our endeavor to carry out International research projects and in hosting various International students (till now 9) for their research work in collaboration with Emory University. Our sincere gratitude to **Dr. K. M. Venkat Narayan**, Professor and Ruth and O.C. Hubert chair, Global Health department, Emory University, who visited BLDE (DU) twice and initiated the idea of developing Center for Social Determinants of Health and promoted this research collaboration. We are also grateful to globally renowned Doctors, **Prof. D. Prabhakaran** M.D., DM (Cardiology), Msc, FRCP, FNASc. Director, Center for Control of Chronic Conditions (CCCC)-Gurgaon, Vice President - Research & Policy, Public Health Foundation of India (PHFI), **Dr. Nikhil Tandon** M.D., Head of the Department of endocrinology, metabolism and diabetes at the AIIMS, New Delhi, **Dr. Shiva S. Halli** Professor, Department of Community Health Sciences Faculty of Medicine University of Manitoba, Winnipeg, Canada, for their guidance & motivation in our journey so far.

We extend our thanks to **BLDEs V.P. Dr. P. G. Halakatti** College of Engineering and Technology and Department of Civil, whose faculty helped in mapping and locating our Urban cohort houses in Vijayapura through GPS technique.

The Commissioner of Food, Civil Supplies and Consumer Affairs of Vijayapura district (Vijayapura and B.Bagewadi taluka) by providing their valuable inputs in framing our survey instrument on Public Distribution System. We will be sharing our research findings with concerned officials. Our acknowledgements to **The District Education Dept. (DDPI) and Block Education officer** for their permission to involve school children in our Drivers of Food choice study and Home environment and Adolescent unhealthy weight status in school going adolescents of Vijayapura study. We appreciate the cooperation and support extended by **Rural participant school staff** (4 private & 3 government) in conducting our DFC research project in 2019-2020. We are grateful to our participant Adolescents and their parent/caretakers from Ukkali village and Vijayapura city for their time and cooperation without whom these studies would not have been completed. Last but not the least we thank our dedicated team of Field Interviewers and Supervisors.

Acknowledgement of Funders for our research studies :

"Drivers of Food Choice (DFC) Competitive Grant Programs, funded by the UK Government's Department for International Development and the Bill & Melinda Gates Foundation and managed by the University of South Carolina, Arnold School of Public Health, USA". (2018-2020)

"Fogarty International Centre and Eunice Kennedy Shriver National Institute of Child health and Human Development at National Institute of Health, USA" (Grant ID-D43HD065249-S1).

Glimpses of Food Environment in Vijayapura District.



Kirana Shop in Rural Area



Market in Rural Area



Kirana Shop in Urban Area



Super Market in Urban Area