

# Intervention for improving nutritional status of children in Koppal District of Karnataka state

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**Abstract**—Malnourishment is indeed a huge public health problem in India with more than half the surveyed states reported every third child below five suffering from chronic malnourishment<sup>1</sup> The Government of India along with the state governments have introduced several welfare schemes to address the same including the introduction of crèches known as “Anganawadi”.

The southern states in India have performed better in addressing this problem but still the state of Karnataka has figures that show high malnutrition. For example, the National Family Health Survey-4 (NFHS-4, 2015-16) reported that the prevalence of underweight, stunting, and wasted among under-five is 36%, 38%, and 28.5%, respectively at the national level and 31.5%, 32.6%, and 24.8% respectively, in Karnataka state. Prevalence of underweight is 37% among under-five children using the WHO growth standards reported in a study done in Belgaum<sup>2</sup>

Despite these stark figures this study emphasizes the fact there are interventions that can reduce the malnutrition. For assessing the child’s nutrition this study used the standard protocols that are provided by the Government of Karnataka’s, Department of Women & Child Development Empowerment of Differently Abled and Senior Citizens (<https://wcd.karnataka.gov.in/english>). Using these standard procedures and in addition with community intervention it was possible to reduce malnutrition to a considerable extent, just within a short period of five months.

This study after doing an anthropometric assessment survey in four talukas of Koppal District (Koppal, Kushtagi, Gangavati and Yelbarga) has been followed up by an interaction with the mothers to initiate dietary changes in their children. Because of these dietary changes there has been an observation from this study that there is improvement in the nutritional status of the children within a short period of five months.

**Index Terms**—Child-health, epideomology, anganawadi, nutritional disorders, junk-food, feeding behaviour and Pushti packet.

## I. INTRODUCTION

India currently records the highest number of undernourished and underweight children in the world, higher than even sub-Saharan Africa. Forty-seven million children under the age of five are stunted.

While Karnataka is a relatively better-faring in terms of indicators, the nutrition scenario in the state is a cause for concern when compared with other southern states such as Andhra Pradesh, Tamil Nadu, Telangana, and Kerala.

According to NFHS - III data, Karnataka performed relatively worse on indicators such as Infant Mortality Rate (IMR – 43 in Karnataka, 30.4 in Tamil Nadu and 15.3 in Kerala) and under-5 Mortality Rate (U5MR – 54.7 in Karnataka, 35.5 for Tamil Nadu and 16.3 in Kerala). 28.9% of children in the same age group have reported underweight, of whom 9.8% are said to be severely underweight<sup>3</sup>

Malnutrition is one of the world’s most serious but least-addressed development challenges. Its human and economic costs are enormous, falling hardest on the poor, women, and children<sup>4</sup>.

According to the report of the NITI Aayog (Nourishing India: National Nutrition Strategy), five districts in Karnataka - Ballari, Bagalkot, Koppal, Kalaburagi and Yadgir are located among the 100 poor performing districts with very high levels of stunting. These districts of Karnataka can also be equated with the BIMARU state of Rajasthan where five districts have high levels of stunting. Moreover, while comparing the five poorly performing districts of Karnataka with the 72 districts from the BIMARU (Bihar, Madhya Pradesh, Rajasthan, and Uttara Pradesh) states. In the case of wasting, Karnataka is in the seventh position. It is 19% in Karnataka whereas the national average is only 17%. In the state, 32% of the children are

underweight and it scores the ninth position in the prevalence of underweight<sup>5</sup>

## II. MATERIALS AND METHODS

Four Talukas viz Koppal, Yelburga, Kushtagi and Gangavati in Koppal district of the state of Karnataka in South India, were chosen for the study. And in each taluka, five hundred children between the age group of 6 months to 5 years in rural areas were selected for the survey (Attachment A – list of the villages selected for the survey and number of children surveyed). Selection of the children in these villages was done by including families that were marginal, landless, and other oppressed communities. A hands-on-training was imparted in doing anthropometric assessment of children and communication skills to totally 20 village women (henceforth called as Village Activists), many of whom had attended school and few were graduates. With these inputs the Village Activists with a survey questionnaire (Attachment – B), a weighing machine along with a scale to assess height of the child, 6 months to 5 years charts to assess nutrition, stunting and wasting of each child and a bag to carry all this so that he/she can move around easily in the community. The Village Activists were also trained in technique of ‘Motivational Interview’ (<https://motivationalinterviewing.org/>) – to motivate the mothers for proper diet of the child.

Each child was weighed and height assessed thrice with roughly a month interval and at each monthly meet with the mother and/or other family members as the situation may be needed and it was emphasized by the Village Activist that there is a need for bringing in nutritional changes for the child. The emphasis for change that was sought was on four aspects: - firstly the child should be fed frequently – 5 to 6 times daily with food that is prepared at home, secondly to stop excessive use of junk-food for the child (picture of few common junk-food available in the village is Attachment C), thirdly for proper use of the nutrition food packet that supplied by the Karnataka government through the Anganawadi, known as Taluka: Koppal

“Pushti” (picture of the Pushti packet and its contents is Attachment D) and fourthly last but not least that the mother/father should spend some time with their child everyday by sharing the day’s events or some sharing should take place like sharing a story etc.

Totally twenty Village Activist were chosen, five for each of the four talukas and every Village Activist was given ‘hands-on-training’ and equipped to assess the weight and height of the child and by using the survey format determine whether the child was malnourished, stunted, or wasted. Every Village Activist was expected to assess hundred children and then follow them up every month for the next three months. After assessing the nutritional status of the child, the Village Activist will explain to the mother/father and other family members as the need may be for bringing the four aspects of nutritional changes as listed above. In addition, each Village Activist conducted mothers’ meeting in their village and did a demonstration of the proper preparation and use of the “Pushti” packet for feeding the child. During these demonstrations Village Activists emphasized the need for all the four points mentioned above.

Participatory Research Action<sup>6</sup> methodology was used from the beginning since the overall objective of this was to build leadership among mothers so that they can go and stake their claim for various welfare programs by the government for their child.

## III. RESULTS

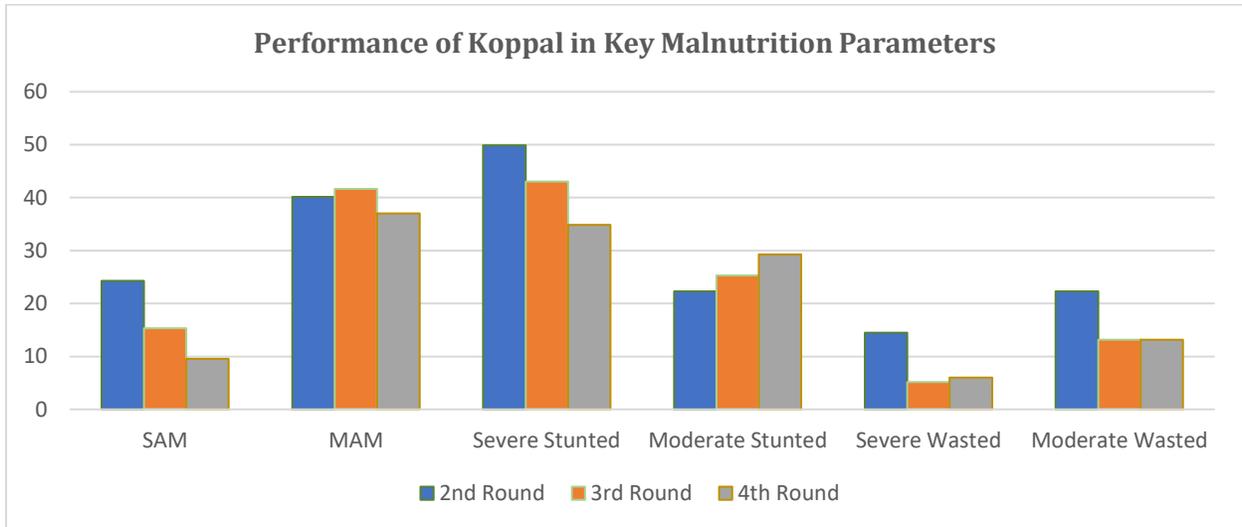
### Koppal District – Analysis of Malnutrition Survey

The 6 outcome indicators, SAM, MAM, Severe Stunting, Moderate Stunting, Severe Wasting and Moderate stunting are analyzed for the talukas Koppal, Gangavathi, Yelburga and Kushtagi.

At Koppal, Gangavati and Yelburga talukas survey was done four time but the first round of survey was dropped because it had few discrepancies. That is the reason as to why the Excel charts pasted below under Results, that 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> round has been mentioned. But at Kushtagi taluka three rounds of survey was done and the same has been shown.

Indicators	2nd Round	3rd Round	4th Round
SAM	24	15	10
MAM	40	42	37
Severe Stunted	50	43	35

Moderate Stunted	22	25	29
Severe Wasted	15	5	6
Moderate Wasted	22	13	13

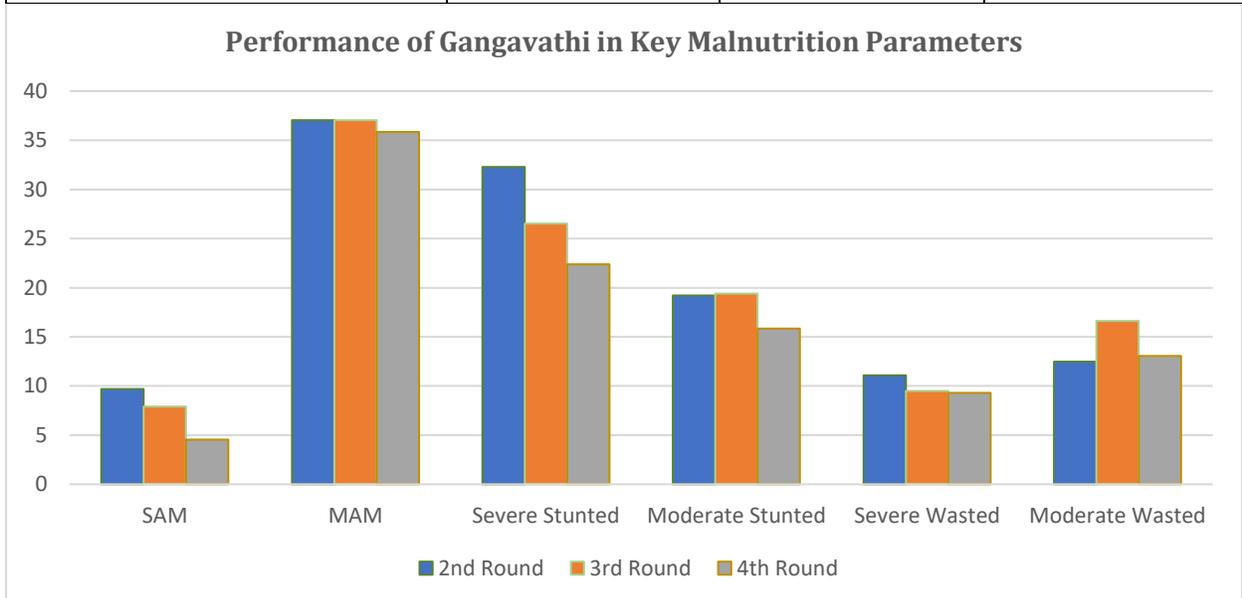


Except for Moderate Stunting rates, all the other indicators have shown decreasing rates.

Taluka: Gangavathi

Gangavathi Performance

	2nd Round	3rd Round	4th Round
SAM	10	8	5
MAM	37	37	36
Severe Stunted	32	27	22
Moderate Stunted	19	19	16
Severe Wasted	11	10	9
Moderate Wasted	12	17	13

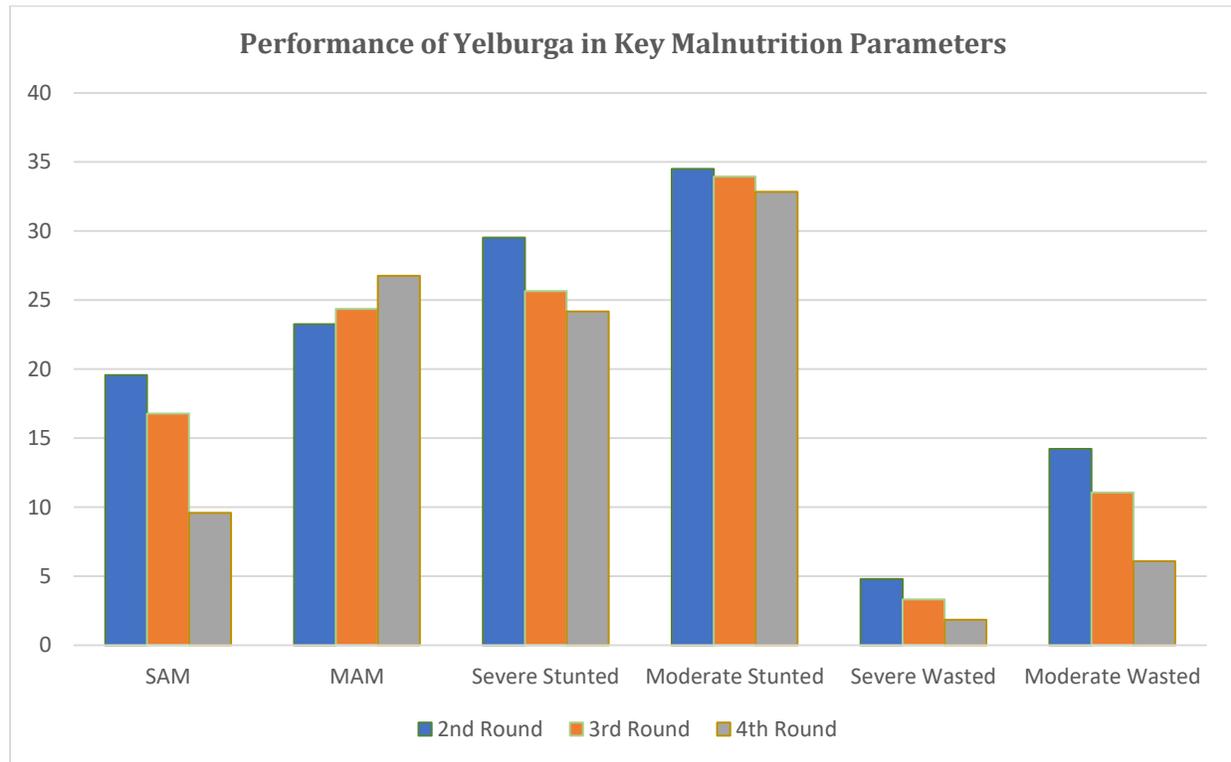


The rates of all the key indicators have shown a decrease, though MAM rates have remained relatively stagnant.

Taluka: Yelburga

Yelburga Performance

	2nd Round	3rd Round	4th Round
SAM	20	17	10
MAM	23	24	27
Severe Stunted	30	26	24
Moderate Stunted	35	34	32
Severe Wasted	5	3	2
Moderate Wasted	14	11	6

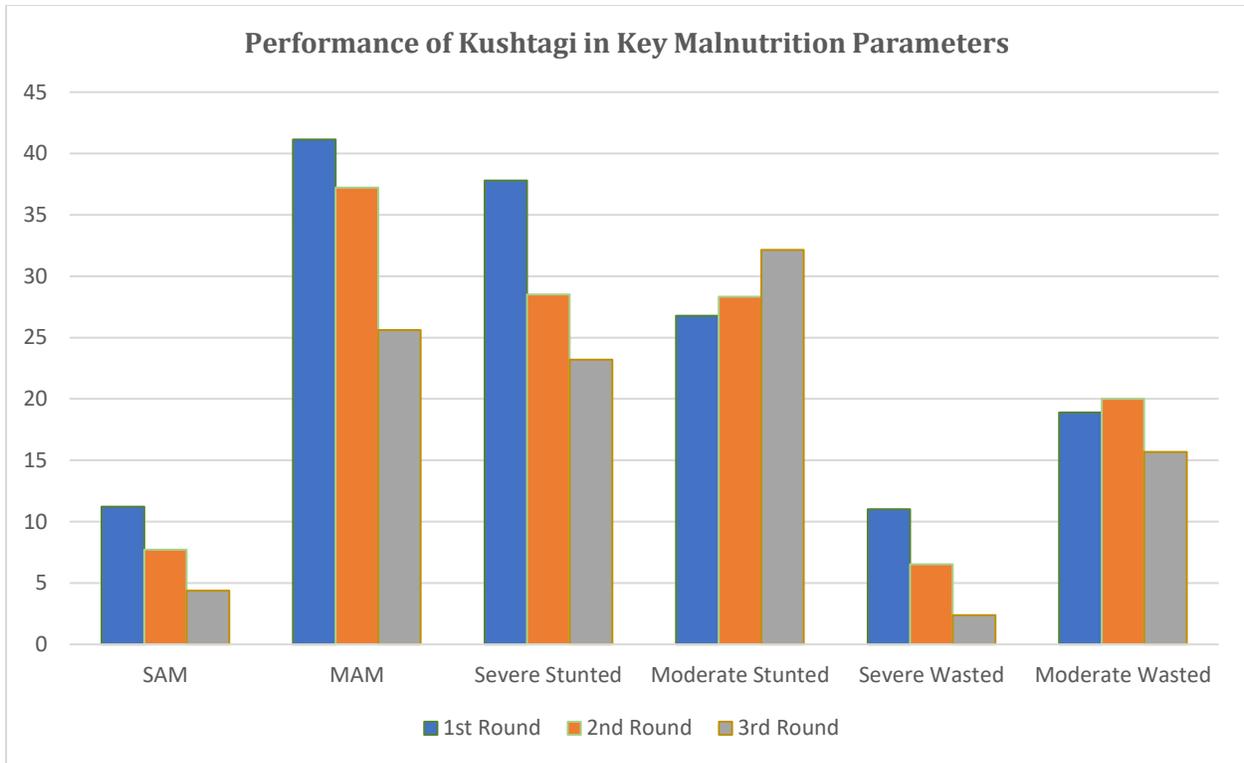


The MAM rates have increased by almost 3 percentage points between the 2nd and 4th round. All the other indicators have shown a decreasing trend.

Taluka: Kushtagi

Kushtagi Performance

	1 <sup>st</sup> Round	2 <sup>nd</sup> Round	3 <sup>rd</sup> Round
SAM	11	8	4
MAM	41	37	26
Severe Stunted	38	29	23
Moderate Stunted	27	28	32
Severe Wasted	11	7	2
Moderate Wasted	19	20	16



The rates of all the key indicators are falling except for Moderate Stunting.

#### IV. DISCUSSION

Even though several nutritional (welfare) programs are implemented and existing in Karnataka and India, the problem of undernutrition among children has not changed significantly<sup>2</sup>

An improvement in the nutritional status of children can be achieved by creating awareness among the mothers. A holistic approach comprising empowering the women with education, decision making in child rearing, health care, complete immunisation including optional immunisation and preparation of nutritious food is required to combat the malnutrition among children<sup>2</sup>

Anganawadi were started by the Indian government in 1975 as a part of Integrated Child Development Services (ICDS - <https://dwc.karnataka.gov.in/> and <https://wcd.nic.in/>) to combat malnutrition. Anganawadi literally mean “courtyard shelter” in Hindi. It is one of the largest child care programmes in the world aiming at child health, hunger, malnutrition, and its related issues. Under the ICDS scheme, one trained person is allotted to a population of around

1,000, to bridge the gap between the person and organized healthcare, and to focus on the health and educational needs of children aged 0-6 years. This person is the Anganwadi worker or teacher.

In India today there are 1,395,000 Anganawadi workers reaching out to a population of over hundred million women, children, and sick people, helping them become and stay healthy. Anganwadi workers are the most important and oft-ignored essential link of Indian healthcare<sup>7</sup>

This study is focussed around the various activities that are centred around nutritional supplements and care centre that are provided at Anganawadi for children in the age group of three to six years.

The Anganawadi centre provides nutritional supplements to children which include three eggs every week, one packet of Pushti powder every month (from 6 months to 3 years) and in addition fresh cooked meals that is fed to every child attending Anganawadi. The Pushti is a powdered mixture in different proportions. Pushti powder has been prepared under the guidance of renowned expert nutritionist guidance at CFTRI, Mysuru (<https://cftri.res.in/>). Our field level observations were rather disappointing

because most mothers never used this nutrition packet. They would feed it to cows/buffaloes in their backyard. In response Jagruti, Koppal (<http://www.jagruti.org/>) team evolved – simple one-page write-up in regional language (Kannada) and distributed it among mothers. Jagruti organised ‘Mothers meetings’ in every village where different dishes from Pushti powder, to suit the taste of the child, were prepared. During the survey it was also discovered that money was spent on junk-food that was given to children<sup>8</sup>. This was discouraged continuously throughout the consecutive interviews and other intervention such as ‘Mother’s Meets’. The study also examined the type of junk-food that children procured from the village outlets/shops. (Picture is attached as Attachment - C). It is observed that very finely ground and polished wheat flour was common ingredients among most of the junk food. Many popular sweet dishes from the village bakeries also contained this. Eating bakery products was discouraged. In addition, mothers were told to feed the child at least five to six times daily with traditional dishes. It was these small interventions, which involved counselling and breaking myths among the mother and her family members including her mother-in-law and husband that resulted in improvement in nutrition status of the child as stated above. Few pictures to get a glimpse of the community involvement (Attachment – E). In addition, Excel sheet containing all the details of survey are uploaded and can be accessed at [https://www.mediafire.com/folder/feabjk9v13y3g/KO\\_PPAL\\_SURVEY](https://www.mediafire.com/folder/feabjk9v13y3g/KO_PPAL_SURVEY).

#### V. RECOMMENDATIONS

- a) There needs to be several studies with more children and mothers recruited for the study, so that it becomes statistically robust and significant to influence the policy makers.
- b) There is an urgent need to develop appropriate and people-friendly health education material addressed to the mother/father etc, like posters, pamphlets, and small video clippings for the proper use of the Pushti powder.
- c) There is also an urgent need to standardize the weighing machines that are used at the Anganawadi for weighing the children as otherwise the results

could be misleading. As of now no such mechanism exists to the best of our knowledge.

d) SAM (Severe Acute Malnutrition) children that needed admission had to be referred to the district hospital, at the Nutritional Rehabilitation Centre (NRC). Most mothers are reluctant, even though they are entitled for daily wages as long they stay with their child. The main reason she could not go was the household responsibilities like, cooking, cleaning that are entirely dependent on her. So, this needs a totally different approach and same facilities need to be provided at the Primary Health Centres of the government, where the mother and baby can visit in the morning and return home.

e) Though Mother’s Meet are to be organised at every Anganawadi but it happens rarely.

#### VI. CONCLUSIONS

- i. There are very few significant studies that have examined the impact of community intervention to the best of our knowledge. So, there is an urgent need for more such studies.
- ii. Though the Anganawadi scheme is in existence for such a long time, since 1975 it has not produced the much-needed changes. With this short intervention for just six months this study has shown that it is possible to bring in change. So, there is a need to relook at the entire gamut with a focus on the community participation and the mother involvement.

#### VII. ACKNOWLEDGEMENT

- i. Acknowledge the support by Jagruti (<http://www.jagruti.org/>) a resource team that gave the technical details, for mobilizing mothers and the communities.
- ii. Acknowledge the support given by the donor AID, India, USA (<https://aidindia.org/>) for funding this project of Jagruti.

Appendix

ANNEXURES: -

- A. List of the villages selected for the survey and number of children surveyed
- B. Survey questionnaire
- C. Picture of common types of junk-food that children procured from the village outlets/shops.
- D. Picture of the Pushti packet and its contents

E. Few pictures to show community involvement.

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ANNEXURE – A

List of villages

GANGAVATHI TALUK	KOPPAL TALUK
1) Angadi Sanganna camp 2) Baragooru 3) Chikkadanakanakal 4) Hegedal 5) Hoskera 6) Hoskera Daggi 7) Hosooru 8) Kotayya camp 9) Kotnekal 10) Prashtanagara 11) Savala camp 12) Siddapura	1) Bhagyanagar 2) Bikanalli 3) Gandinagar 4) Hanumanahatti 5) Hiresindhogi 6) Irakalgada 7) Kodadal 8) Koogamma camp 9) Ojinhalli 10) S Nagara Erakallgada 11) Siddeshwara camp 12) Waddarahatti 13) Yatnatti
KUSHTAGI TALUK	YELBURGA TALUK
1) Bijakal 2) Chalagera 3) Hanumasagar 4) Kesooru 5) Madnal 6) Takkalike 7) Yaragera	1) Ambedkar nagar 2) Bhanapura 3) Bhatapanahalli 4) Chandura 5) Dyampur 6) Gudneppanamath 7) Itagi

	8) Kallur 9) Karmudi 10) Kolipete 11) Lakmapur 12) Masabahanchinal 13) Mudol 14) Rajoor 15) Sanganal 16) Talabal 17) Talakal 18) Ttumaraguddi 19) Yalburgh
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Number of children surveyed

GANGAVATHI TALUK	KOPPAL TALUK
500	502
KUSHTAGI TALUK	YELBURGA TALUK
500	500

ANNEXURE -B

English translation of the original survey format from regional language (Kannada)

JAGRUTI, Koppal

Nutritional assessment of children below 6 years through

Participatory Research Action

- 1) Mother's name \_\_\_\_\_ Age \_\_\_\_\_ Education \_\_\_\_\_
- 2) Mobile number \_\_\_\_\_
- 3) Child/Children age,  
 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_ 6 \_\_\_\_\_
- 4) Name and date of birth of children below 6 years  
 1 \_\_\_\_\_ 2 \_\_\_\_\_  
 3 \_\_\_\_\_
- 5) Weight of children below 6 years  
 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_
- 6) Height of children below 6 years  
 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_
- 7) Left mid arm circumference of children below 6 years  
 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_
- 8) Does the mother go for work in farm? Yes \_\_\_\_\_ No \_\_\_\_\_
- 9) If answer is "Yes", then who takes care of the child in her absence? \_\_\_\_\_
- 10) Vegetarian \_\_\_\_\_ Only eggs in food \_\_\_\_\_ Non-vegetarian \_\_\_\_\_
- 11) If non-vegetarian then in a week how often do you cook non-vegetarian? \_\_\_\_\_
- 12) What else do you feed the child with apart from meals?  
 For boy child \_\_\_\_\_  
 For girl child \_\_\_\_\_
- 13) Do you think that a boy needs more food? \_\_\_\_\_  
 If so, why? \_\_\_\_\_
- 14) Last week for how many days you gave eggs to your child? \_\_\_\_\_
- 15) Do you give money to child to buy eatables from the shop or bakery? \_\_\_\_\_

Last week how much money you gave? \_\_\_\_\_

16) Do you know the harms from eating fast-food? \_\_\_\_\_

17) Do you have toilet in your house? \_\_\_\_\_

Does everyone in the family use it? \_\_\_\_\_

18) Are boys usually naughtier than girls? Yes \_\_\_\_\_ No \_\_\_\_\_

Explain -

19) Do you spend time with your child (at least half an hour daily)?

Yes \_\_\_\_\_ No \_\_\_\_\_

20) Explain to the mother the importance of spending time with child and observe the mother's reaction:- 1. No reaction \_\_\_\_\_ 2. Excited and wants to implement \_\_\_\_\_ 3. moderate \_\_\_\_\_ 4. Any other \_\_\_\_\_

21) Do you give "Pushi" to children below 3 years?

22) Do you give it to your child? Yes \_\_\_\_\_ No \_\_\_\_\_ If answer is no, then seek an explanation:-

Name of the person who conducted the interview -

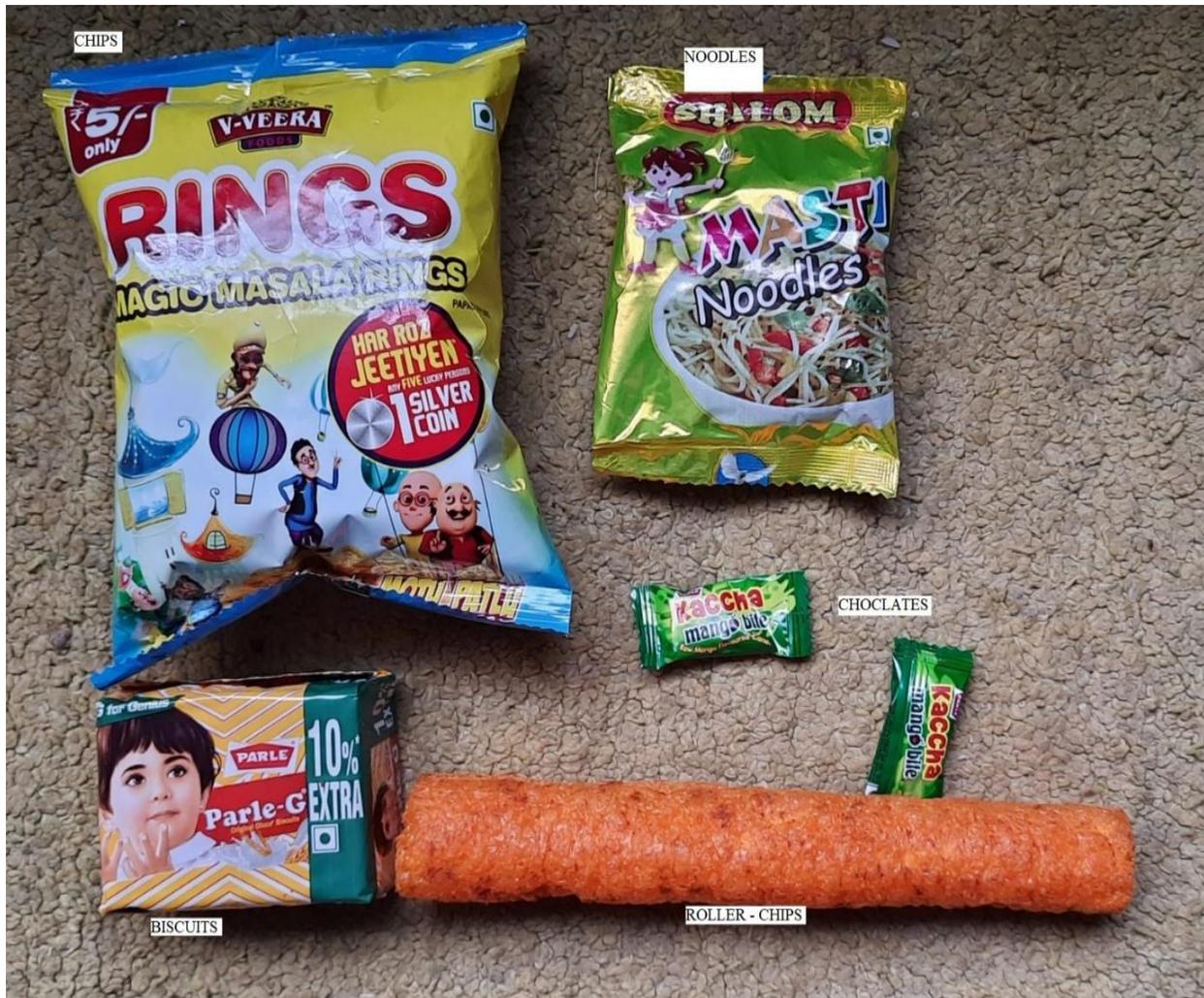
Mobile number

Date

Name of village

Taluka

### ANNEXURE – C



ANNEXURE – D

PUSHTI POWDER PACKET



ANNEXURE – E

