Abstract

This paper provides an overview and key findings of a study conducted to assess the preference of beneficiaries of Public distribution system (PDS) scheme under National Food Security Act 2013 in India to buy fortified wheat flour in place of wheat from fair price shops. The study involves collection of vital information by collecting primary data from 35 villages in 7 blocks of Vidisha district of Madhya Pradesh State in India. Total 175 PDS beneficiaries having Ration card of Anyodyaya (extreme poor) and BPL categories were surveyed. The study findings clearly revealed that if fortified wheat flour will be introduced under PDS scheme then it would be beneficial for consumers in terms of health, nutrition and save their time and money. Moreover, consumers may get economic benefit as well by getting more time to work. Therefore, findings will be helpful for Government for enhancing effectiveness of PDS scheme by fortified wheat flour distribution as a result add value in enhancing nutrition status of the State. Hence, findings of this study may be used to determine the future course of action for fortified wheat flour distribution under PDS scheme.
I. INTRODUCTION

Anaemia is the most common and widespread nutritional disorder in the world and Madhya Pradesh has a high burden of anaemia especially due to iron deficiency resulting to reduce the work capacity of individuals and entire population, bringing serious economic consequences and obstacles to State/national development. Anaemia, a leading cause for maternal mortality and low birth weight, is a widespread public health problem affecting infants, children, adolescent girls and women of reproductive age. In Madhya Pradesh, anaemia among women is an alarming concern wherein nearly half of the women in the reproductive age group (15-49) are anaemic. In children the situation is even more worsen with more than 68% children (6-59 months) being anaemic as reflected in below table.

<table>
<thead>
<tr>
<th>Indicators (%):</th>
<th>NFHS 3 2005-06</th>
<th>NFHS 4 2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children age 6-59m who are anaemic (&lt;11g/dl)</td>
<td>74</td>
<td>68.9</td>
</tr>
<tr>
<td>Non-pregnant women age 15-49 years who are anaemic (&lt;12g/dl)</td>
<td>55.8</td>
<td>52.4</td>
</tr>
<tr>
<td>Pregnant women age 15-49 years who are anaemic(&lt;11g/dl)</td>
<td>57.9</td>
<td>54.6</td>
</tr>
<tr>
<td>All women age 15-49 years who are anaemic</td>
<td>55.9</td>
<td>52.5</td>
</tr>
<tr>
<td>Men age 15-49 years who are anaemic (&lt;13g/dl)</td>
<td>25.4</td>
<td>25.5</td>
</tr>
</tbody>
</table>

(Source – NFHS 3 and 4)

Looking to the high anaemia level across the population in Madhya Pradesh, it is necessary to explore different aspects and strategies for preventing the prevailing anaemia situation such as Iron Folic Acid (IFA) supplementation, dietary diversification and food fortification. As passed by the Parliament, Government of India has notified the National Food Security Act, 2013 on 10th September, 2013 with the objective to provide for food and nutritional security in human life cycle approach, by ensuring access to adequate quality of food at affordable prices to people to live a life with dignity. The Act provides for coverage of up to 75% of the rural population and up to 50% of the urban population for receiving subsidized food grains under Targeted Public Distribution System (TPDS), thus covering about two-thirds of the population. The eligible persons will be entitled to receive 5 Kgs of food grains per person per month at subsidized prices of Rs. 3/2/1 per Kg for rice/wheat/coarse grains. The existing Antyodaya Anna Yojana (AAY) households, which constitute the poorest of the poor, will continue to receive 35 Kgs of food grains per household per month. Hence, subsidized sale of fortified wheat flour instead of wheat from fair price shops to the beneficiaries of Public distribution system (PDS) under social safety net program seems viable strategy to tackle widespread anaemia problem. Hence, a quick survey in Vidisha district was undertaken in November 2016 to know the preference and willingness of the beneficiaries of PDS to buy fortified wheat flour instead of whole wheat from fair price shops. The major findings of the study captured in this paper.
II. OBJECTIVES

1) To understand how much wheat out of total received quantity milled at local mills (chakki)s and quantity of wheat flour received after removing wastage (Jalan) during milling

2) To understand the cost to the consumer per kilogram of wheat flour including the loss of labour or wage cost and without including wage cost

3) To know the preference of PDS consumers to buy fortified wheat flour over whole wheat

4) To know the willingness to pay additional cost if fortified wheat flour is distributed in place of wheat under PDS scheme.

III. HYPOTHESIS

Rural consumers do not prefer buying fortified wheat flour instead of whole wheat from fair price shops under PDS scheme

IV. RESEARCH METHODOLOGY

a) Research design - The research is having mixed approach quantitative and qualitative and problem oriented. The research is conclusive in nature follows descriptive research design. Quantifiable information is collected and is subsequently used for statistical inferences on target audience through data analysis. This helps in designing the strategies being used for anaemia prevention in overall ambit of food fortification

b) Sampling – Sample size of 175 respondent is taken so as to get the desired and reliable result. Judgmental sampling technique has been used as a nonprobability sampling method in the present study.

c) Collection of Data – The study involves collection of vital information by primary source. Primary data is collected by the means of questionnaire. Total 35 villages were surveyed in 7 blocks of Vidisha district. Total 175 PDS beneficiaries surveyed out of which 34 were Anyodaya (extreme poor) Ration card holder and 141 were the BPL Ration card holders.

d) Limitation of the study-

1) The sample size was small which may not represent the entire population.
2) The period was limited to complete the study.
3) The study is limited to respondents of certain categories only.

V. DATA ANALYSIS AND INTERPRETATION

i) Wheat allotment - On an average of 23.5 kgs of wheat was sold to a family through fair price shops. Hence, total quantity of 4,119 kgs of wheat was sold to 175 families, interviewed during survey.

ii) Extra wheat procured over and above the PDS allotment- Approx 85% PDS beneficiaries are buying extra wheat over and above the PDS allotment from open market as reflected in figure 1
iii) **Reduction in actual quantity after washing and milling:** 92% (161) of PDS beneficiaries’ said that there is reduction in quantity after washing of wheat and during milling which is significant i.e. 250 gm reduction after washing and again 250gm reduction after milling. Therefore, the overall reduction that a family needs to bear comes to about 500gm per month. However, 20% (36)families responded that loss due to washing may go beyond 500gm per month and 10% (18) families said that there were milling loss beyond 500gm. *(Refer figure: 2)*

**Figure-2: Quantity reduced after washing and milling of wheat**
iv) **Consumption of PDS wheat** - It was found that 95% (167) families consume the complete wheat every month what they get from fair price shops.

v) **Means of carrying wheat and wheat-flour and storage at home by PDS consumers:**

About 90% (158) PDS beneficiaries use Sacks (Bories) for carrying wheat to local flour mills (atta chakkies) and bringing wheat flour back to home. It was also found that more than 75% (131) PDS beneficiaries uses some metallic or plastic containers for storage of milled wheat flour at home for which they have to invest some money in procurement. *(Refer figure: 3)*

![Figure 3: Means of carrying wheat and wheat flour by PDS beneficiaries](image)

vi) **Time spent for milling wheat:** More than 61% (107) PDS beneficiaries said that it takes less than half an hour for milling their wheat flour. But, it is not the same case for other people. About 40% of the families had to wait for more than half an hour to get their wheat milled at local mills (atta chakkies). However, this time may increase further when travel time to reach local mills (atta chakkies) is considered and added to the milling time, it may go beyond 1 hour for each family. *(Refer figure: 4)*

![Figure 4: Time spent for milling](image)
vii) **Transportation used for milling** – It was found that 69.1% (121) beneficiaries are going to local mills (chakkis) carrying wheat by walking that reflects that they are investing more time to reach local mills (chakkis) resulting to their wage loss. Rest all are going through other means of commutation which also reflects that they are paying separate cost for transportation. (Refer figure 5)

![Transportation used for milling](image1)

**Figure 5: Transportation used for milling**

viii) **Willingness to use and pay extra for fortified wheat flour:** This study shows great acceptance on the use of fortified wheat flour instead of commonly used wheat flour. It was found that 83% (146) families readily agreed to use fortified wheat flour and only 4% (7) families were in doubt to use fortified wheat flour. Moreover, 82% of the families were even ready to pay little extra to get this fortified wheat flour for their families. (Refer figure: 6 and 7)

![Willingness to use Fortified wheat flour](image2)

**Figure 6: Willingness to use and pay extra for Fortified wheat flour**
Figure 7: Willingness to use and pay for fortified wheat flour

ix) **Cost to consumer** –

1) **Average amount paid for milling:** It was found that 81% (141) of PDS beneficiaries are already paying an extra amount of INR 1 per kg of wheat for milling at local mills (atta chakkies). It was found that other 19% (34) beneficiaries were paying even higher rate for milling their wheat. *(Refer figure: 8).*

![Figure 8: Avg cost for milling](image)

2) **Average amount paid for procurement and milling with wage loss:** The total extra cost to consumer including purchasing, milling, shortage during cleaning & grinding including wage loss (1 hour) is NR 14,723/- for 175 families per month i.e. INR 84 per family for 23.5 k.g. wheat per month which is approx. Rs 3.57 per k.g. of wheat. However, cost of transportation to local mills (chakkies), cost of bag/containers not included in the same, therefore it may be further increased.

**VI. CONCLUSION**

- It is revealed in the study that whatever wheat is being distributed through fair price shops is mostly used by the family and milled in full quantity.
- 83% beneficiaries are willing to consume fortified wheat flour to be procured from fair price shops and out of that 82% beneficiaries are even willing to pay little extra to buy fortified wheat flour from fair price shops.
• Average cost for wheat procurement, milling, shortage and wage loss is INR 84/- per family per month for 23.5 Kilogram i.e. coming to INR 3.57/- per Kilogram. However, cost of transportation to local mills (chakkis) cost of bag/container for carrying etc. not included in the same.
• If fortified wheat flour is introduced from fair price shops under PDS scheme then it will be beneficial for consumers in terms of health and save their time and money as they can save milling charges, transportation cost. Moreover, no struggles for wheat grinding, net weight benefit no loss of flour in local mills and save water usage for cleaning of wheat. Finally, PDS beneficiaries may get economic benefit by getting more time to work.
• Entitlement of food grains received under PDS scheme is not sufficient for the beneficiaries; therefore efforts should be there for enriching the existing entitlement of food grains with vitamin and minerals to improve the health and nutrition status of the targeted population. Hence, fortification of wheat flour seems viable strategy.
• Study revealed that consumers preferred, getting fortified wheat flour in good quality air tight packet through fair price shops under PDS, then only it is acceptable to consumers, therefore packaging issue to be taken care by Government to ensure more acceptability of fortified wheat flour among PDS beneficiaries.

VII. ACKNOWLEDGEMENT
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VIII. REFERENCES
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