Nutrition Policy Guidance Notes

PUNJAB

29th December 2012
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Introduction

Pakistani women and children suffer from some of the highest rates of malnutrition in the world with a national nutritional stunting prevalence among children under five of 43.7%\(^1\). Pakistan also has the second highest number of severely wasted children next to India. The magnitude of the country’s nutrition problem is reflected by the fact that half of the world’s malnourished women and children, and an estimated 78% of the world’s wasted children live in Bangladesh, India and Pakistan (Gross R, Webb P 2006.)

Recognizing the implications of such high levels of malnutrition for economic and human development (discussed below) and for efforts to achieve Millennium Development Goals\(^3\), the Government of Punjab and its partners have decided to undertake a multisectoral nutrition review involving representatives of those key development sectors which, collectively, have considerable potential for reducing malnutrition significantly in the province.

The review is designed to assess provincial malnutrition levels, identify sectoral programs which have been associated with malnutrition reductions, and to begin identifying possible roles for these sectors in a collective effort to reduce malnutrition in the province. Also made explicit in the review are the benefits likely to accrue to each of the sectors from improved nutrition in the province.

### Multisectoral Nutrition in Peru

- After a decade of little change in stunting prevalence, the Office of the Prime Minister with donor agency encouragement, issued directives, and itself facilitated horizontal integration among Ministries of Education, Health, Women and Social Development and Finance and Economics.
- A conditional cash transfer program (JUNTOS) was also coordinated among these ministries.
- Simultaneously, the Child Nutrition Initiative: a coalition of government, international agencies, NGOs and civil society organizations assumed a primary role in advocacy
- In 2006, the Child Nutrition Initiative succeeded in getting 10 presidential candidates to sign a commitment to reduce chronic malnutrition in children under 5 by 5 percentage points in 5 years (“5 by 5 by 5”)
- As a result, Peru reduced stunting:
  - from **22.9% (rural 40.1%)** in 2005
  - to **17.9% (rural 31.3%)** in 2010
  thereby achieving its target of a 5 percentage point decrease in 5 years

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\(^1\) All data is from the Pakistan National Nutrition Survey (NSS), 2011 unless otherwise indicated. The 2011 survey is the first to provide representative data for each of the provinces.

\(^2\) By comparison, India = 48%; Nepal = 45%; Bangladesh = 43%; D.R. Congo = 43%; Sri Lanka = 17%

\(^3\) Nutrition is associated with six of the MDGs: Goal 1 relating to the eradication of poverty and hunger, Goal 2 relating to universal primary education, Goal 3 relating to gender equality, Goal 4 relating to child mortality, Goal 5 relating to maternal health, and Goal 6 relating to infectious disease.
Presentation of primary data on malnutrition

Punjab, the most populous province of Pakistan and with the largest economy in the country, contributes more than three quarters of the country’s annual foodgrain production. At the same time, the country faces significant challenges with respect to nutrition.

Nearly 40% of the province’s children under age 5 are nutritionally stunted (39.2%). The prevalence of underweight children is 29.8%, while wasting prevalence is 13.7%. See Figure 1 below which compares stunting in Punjab with national and regional figures.

Unlike many other areas in South Asia, there are no significant differences in the nutritional status of young girls and boys in Punjab. Problems emerge for females however in adolescence.
and adulthood. Only 52.4% of women in Punjab have body mass index which is normal, while 17.7% are underweight and 29.9% are overweight or obese. (Note: Because of the surprisingly high prevalence of overweight and obesity, some country level analysis has been carried out and is presented in the Appendix.) Nearly a quarter of mothers in Punjab have had six or more pregnancies, higher than the Pakistani average.

Finally, micronutrient deficiencies in Punjab are serious. Vitamin A deficiency, which jeopardizes the maintenance of primary functions including eyesight, and seriously reduces immune function leaving the body more susceptible to infection, affects 41.8% of women and 51.0% of children.

Moderate and severe anemia, resulting in part from iron deficiency, and reducing the flow of oxygen from the lungs to the rest of the body, affects 49.3% of pregnant women in the province and 60.3% of children.

Iodine deficiency disorders (IDD) are the single most common cause of preventable mental retardation and brain damage with even mild IDD associated with cognitive loss. In Punjab, median urinary iodine excretion in mothers is barely adequate (102 in a “normal” range of 100-199) indicating that a significant percentage of individuals are deficient. The provincial government is addressing this problem aggressively through salt iodization which presently covers 79% of Punjabi families.

High levels of malnutrition are consistent with high rates of infant and maternal mortality. The infant mortality rate in Punjab is 81 per 1000 live births, higher than the national average. Maternal mortality in the province is 227 maternal deaths per 100,000 live births, higher than that of India, Sri Lanka and Yemen.
The case for investment in nutrition

Malnutrition in Punjab places constraints on economic and social development in the province through three primary pathways as depicted in Figure 2 above:

- **Direct losses in productivity from impaired physical status** – Nutritional status has a clear relationship with productivity (Behrman and Rosenzweig, 2001.) A 1% loss in adult height resulting from childhood stunting is associated with a 1.4% loss in productivity (Hunt J, 2005.) Anemia also has a direct effect on the productivity of adults in physically demanding occupations. Eliminating anemia can increase adult productivity from 5-17% (Horton S et al, 2003.)

- **Indirect losses from poor cognitive function**, leading to decreased active learning capacity and deficits in school benefits. Low birthweight resulting from fetal malnutrition can reduce a person’s IQ by 5 percentage points, stunting can reduce IQ by 5-11 points, and iodine deficiency by 10-15 points. Malnutrition has been found to reduce the likelihood that children will be enrolled in school and reduces the learning capacity of those who are enrolled. There are clear and direct relationships between school performance and subsequent earnings (Grantham-McGregor et al, 1999.)

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• *Losses emanating from increased health costs* resulting when malnutrition reduces immune response to infection. Malnourished children with poor schooling outcomes are also likely to repeat years more often increasing education costs. Such costs fall largely on governments which are responsible for financing health and education for those unable to pay.

The consequences of malnutrition are put in perspective for Punjab in Table 1 below.

**Table 1: Malnutrition in Punjab and Consequences**

<table>
<thead>
<tr>
<th>Form of Malnutrition</th>
<th>Prevalence in Punjab</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stunting (under 5)</td>
<td>39.2%</td>
<td>Reduction of 5-11 IQ points per child&lt;sup&gt;5&lt;/sup&gt;</td>
</tr>
<tr>
<td>Wasting (under 5)</td>
<td>Moderate = 8.9%; Severe = 4.8%</td>
<td>Odds ratio of mortality: moderate wasting = 3.0; severe wasting 9.4&lt;sup&gt;6&lt;/sup&gt;</td>
</tr>
<tr>
<td>Iodine deficiency disorder (school age children)</td>
<td>39.0%</td>
<td>Reduction of 10-15 IQ points per child</td>
</tr>
<tr>
<td>Anemia (under 5)</td>
<td>60.3%</td>
<td>Reduced adult productivity by 5-17%; Loss of up to 25 IQ points in children under 2</td>
</tr>
<tr>
<td>Vitamin A deficiency (under 5)</td>
<td>51.0%</td>
<td>Reduced immunity to disease by 23%</td>
</tr>
</tbody>
</table>

The “first 1000 days,” i.e. the period from conception to two years of age (minus 9 months to plus 24 months) is well recognized as the critical window of opportunity to address malnutrition.

The supporting evidence is clear. For infants and children under the age of two who survive, the consequences of undernutrition are particularly severe, often irreversible, and have profound effects over their lifetimes. During pregnancy, undernutrition can have a devastating impact on the healthy growth and development of a child. (See the “Utilization of Health Services” section below for information on Pakistan’s prevalence of low birthweight, among the highest in the world.) Malnutrition during the fetal period increases significantly the risk of dying in infancy as well as the risk of developing non-communicable diseases such as diabetes in adulthood. Those who survive

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<sup>5</sup> Figures on consequences are taken from The Lancet Series, 2008.

<sup>6</sup> i.e. a severely wasted child has a 9.4 times greater risk of dying before the age of 5 than a child who is not wasted (The Lancet Series, 2008.)

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**Nutrition and Wage Rates in Guatemala**

In Guatemala, individuals who were well nourished before age 3 had, as adults, wage rates 34-47% higher than those who were undernourished as young children.

Hoddinott et al, 2008
are likely to face lifelong cognitive and physical deficits and chronic health problems. For children under the age of two, undernutrition can be life-threatening. It can weaken a child’s immune system and make him or her more susceptible to dying from common illnesses such as pneumonia or diarrhea.

Figure 3 below, for Pakistan as a whole, indicates clearly that stunting, which is already significant in the under 6 month period because of fetal malnutrition and low birthweight, increases steadily until two years of age after which it levels off and then decreases.

![Figure 3: Stunting Rates by Age (Pakistan)](image)

Finally, addressing malnutrition in the first 1000 days and the necessity of healthy pregnancies depends importantly on the nutritional wellbeing of adolescent girls. International evidence now suggests that pre-pregnancy nutritional status and iron stores have a greater effect on pregnancy outcomes than anything taking place during the pregnancy period. (See Figure 4 below on nutrition and the life cycle.)
In combination, these consequences of malnutrition have adverse effects on national social and economic development, and reinforce vicious cycles of malnutrition and poverty. At the same time, interventions to address malnutrition are remarkably cost effective. The box below indicates that five of the ten most cost-effective means of advancing global welfare, as determined by leading economists in the Copenhagen Consensus, are nutrition-related.\textsuperscript{7}

\textsuperscript{7} The 2012 Copenhagen Consensus, following the model of comparable efforts in 2004 and 2008, called together a group of internationally renowned economists, among them four Nobel laureates, to respond to the question: “If we had an extra $75 billion to put to good use, which problems would we solve first?” The experts evaluated a broad array of potential investments capable of addressing major global challenges based on highly quantified background papers, and then ranked these approaches according to cost-effectiveness criteria.
Copenhagen Consensus – Top 10 investments for advancing global welfare

1. **Micronutrient supplements (vitamin A & zinc) – Malnutrition**
2. The Doha development agenda – Trade
3. **Micronutrient fortification (iron and iodine) – Malnutrition**
4. Expanded immunization coverage for children – Diseases
5. **Agricultural R&D on micronutrients – Malnutrition**
6. **Deworming and nutrition programs at school – Malnutrition**
7. Lowering the price of schooling – Education
8. Increase and improve girls’ schooling – Women
9. **Community-based nutrition promotion – Malnutrition**
10. Provide support for women’s reproductive role - Women
Sector by sector relationships with malnutrition and potential nutrition improvement

Figure 5 below presents the classic conceptual framework of the determinants of child malnutrition. As can be seen, malnutrition is the direct result of inadequate food/nutrient intake and infectious disease, the latter resulting in an inability of the body to properly absorb the nutrients consumed. Inadequate food and nutrient intake, in turn, is, in part the result of inadequate access to food (food insecurity), while “disease” often results from some combination of inadequate provision of health services and poor water, sanitation and hygiene practices. Both inadequate food intake and poor health are importantly affected by deleterious maternal and child care practices (an underlying determinant of malnutrition along with food insecurity and inadequate provision of WASH and health services.) Inadequate education, particularly of females, has important negative effects on caring and self-care practices, on the utilization of health services, on family hygiene and on food security. And all of these are affected by economic status, governance and other “basic causes.” Using this conceptual framework, the relationship with nutrition of each of the sectors discussed below becomes clear.

An existing Nutrition Plan of Action for Punjab, utilizing a Women Focused Approach (WFA), has established the following 2015 targets:

- Reduction in stunting prevalence to 32%
- Reduction in wasting prevalence to 12%
- Reduction of maternal anemia to 40%
- Increase in exclusive breastfeeding for children under six months of age from 22% to 40% \(^8\)
- Increase in early initiation of breastfeeding to 50%.

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\(^8\) Note that this indicator is different from that presented in Table 3
Figure 5: Determinants of Child Nutrition

Water, Sanitation and Hygiene (WASH)
As reflected in Fig. 5 above, poor environment (unsafe drinking water and poor sanitation and hygiene, or WASH), underlying determinants of malnutrition, often lead to increases in diarrheal disease, a leading cause of child death in Pakistan, which decreases the absorption of nutrients consumed. Accordingly, even when food consumption is sufficient, such bacterial infection can lead to malnutrition in children (WHO, 2008.) Additionally, open defecation, improper sanitation facilities and unsanitary waste disposal contaminate food in the household as well as food production.

While a large majority of households in Punjab utilize piped water or water from a tubewell or borewell for drinking, (88.9%), it is important to note that there are numerous opportunities for pathogens to make their way into the water prior to ingestion, during water collection,
transport, storage and/or transfer to drinking vessels. The Punjab Municipal Water Act has been drafted and should reduce the misuse of groundwater.

Nearly 20% of households do not have access to hygienic sanitary facilities. In addition, while hand washing after defecation and before preparation of a meal (99.0% and 97.4% respectively) is substantially higher than that in many developing countries, soap is available only in an estimated 77% of Punjabi households. As seen in Figure 6, there is a significant association between the absence of soap and stunting. At the same time, the likelihood of women being free of anemia in Punjab is twice as high where toilet facilities are available at home (73% vs. 36%).

**Figure 6: Stunting by Soap Availability for Handwashing**

Food Security

Food insecurity, the limited or uncertain availability of or access to nutritionally adequate and safe foods throughout the year, is associated with malnutrition as a key underlying determinant of overall food intake in the household (see Fig. 5), although often less well associated with the intake of women and children. Food insecurity may also be a more sensitive measure of food issues experienced by low-income families than household income alone, especially the psychological and social ramifications of a lack of food (Frangillio, 1999.)

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9 The influence of food supply and access on nutritional status of children can be confounded by other key determinants of child nutrition, such as maternal knowledge and caring practices, maternal nutritional status, intra-household food allocation and utilization, access to health services, and WASH factors (Chamarbagwala R et al, 2004.)
Although Punjab is predominantly an agricultural province and produces three quarters of Pakistan’s foodgrain production, fully 60% of its households are food insecure (higher than the countrywide figure of 58%). Of these, 18% are classified as food “insecure with hunger,” and 11.5% are food insecure with severe hunger.

The number of surplus food producing districts in Punjab decreased from 21 to 14 (of a total number of 34 districts) between 2003-04 and 2008-09 while the food deficit districts increased from 7 to 14. During the same time period, the number of districts with “low” to “extremely low” access to food increased from 35% to 53% (SDPI et al, 2009.) Part of this deterioration in Punjab has been the result of an economic and industrial crisis relating to power shortages, increases in production costs and insignificant growth in household income.

Figure 7 below, indicates that stunting is significantly higher in food insecure households. But, importantly, even in food secure households, stunting affects fully a quarter of young children, indicating that food security improvement alone in Punjab is insufficient.

Agricultural and food-related interventions seeking to reduce food insecurity are also likely to reduce malnutrition if they (1) focus on the diversity of food consumption and not simply the quantity; (2) provide special attention to agricultural tasks disproportionately undertaken by women and provide extension services to women directly;\textsuperscript{10} and (3) encourage home garden and small livestock production for home consumption.

Additionally the micronutrient fortification of food products: wheat, edible oil and salt, and the bio-fortification of food staples\textsuperscript{11} are important means of reducing malnutrition.

\textsuperscript{10} In Punjab, women’s agricultural work often includes responsibility for livestock; transplanting; hand harvesting; cleaning, processing and storage of grain, and garden work.

\textsuperscript{11} HarvestPlus testing of wheat varieties with high zinc content is currently underway in Pakistan and India (HarvestPlus, 2011.)
Utilization of Health Services
As indicated in Fig 5, households without regular access to health services (another underlying determinant of malnutrition) may experience higher rates of morbidity and, in turn, increased malnutrition. Proxies for such access may be ante-natal care, immunization rates or the presence of an immunization card.

The secondary analysis of the 2011 NSS data, however, found no statistically significant association between the presence of an immunization card and stunting, this likely explained in part by the high percentage of households using private facilities and practitioners as discussed below.

Coverage of health services relating to nutrition in Punjab is relatively low. One third (33.0%) of reproductive age women received no ante-natal care during their last pregnancy. Of women receiving ANC, only 20% received information on the importance of exclusive breastfeeding and only 0.2% received information on family planning. Relatedly, over a third of women (35.8%) reported receiving no micronutrient supplements during their last pregnancy.

The consequences of such inadequate health services for pregnant women at a national level, coupled with inadequate food consumption, virtually non-existent services for adolescent girls and early age of marriage are particularly serious in terms of pregnancy outcomes in Pakistan and result in the highest recorded prevalence of low birthweight in Asia (32%).

Of young children in Punjab, 60% are fully immunized, the highest coverage of any province or region in the country, but inadequate in terms of public health needs.

Another indicator of the utilization of government health services is the type of practitioner consulted for illnesses. As seen in Table 2 below on practitioner consulted for childhood diarrhea in Punjab, 14% of households used government facilities while 74% used private dispensaries or hospitals. Only 1% of households consulted with LHWs.

These figures reflect relatively low use of government facilities – and in turn, the need to make government facilities significantly more attractive and/or to more fully engage private practitioners and facilities in the provision of nutrition services.

Table 2: Type of practitioner consulted for childhood diarrhea

<table>
<thead>
<tr>
<th></th>
<th>Punjab</th>
<th>Pakistan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private dispensary or hospital</td>
<td>74%</td>
<td>66%</td>
</tr>
<tr>
<td>Government dispensary or hospital</td>
<td>11%</td>
<td>17%</td>
</tr>
<tr>
<td>Rural health center or Basic health unit</td>
<td>3%</td>
<td>6%</td>
</tr>
<tr>
<td>Local Health Worker</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

12 There is no official birthweight data from Afghanistan. Internationally, only Mauritania has a higher prevalence at 34% (UNICEF, State of the World’s Children, 2012.)

Infant and Young Child Feeding Practices

Although IYCF practices relate to several different sectors, they are placed under the Health sector in this Nutrition Guidance Note given that the health sector often has primary responsibility for addressing these practices.

As indicated in Figure 5, caring practices are a key underlying determinant of nutrition. Fortunately, Punjab has a culture of continued breastfeeding. But, as seen in Table 3 below, it faces problems of early initiation of breastfeeding, of inadequate exclusive breastfeeding for six months and of extremely low dietary diversity among children. Exclusive breastfeeding in Punjab, however, increased significantly from 30% in 2003-04 to 49% in 2007-08 (Punjab MICS, 2008.)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>NNS %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation of breastfeeding within 1 hour of birth</td>
<td>28</td>
</tr>
<tr>
<td>Exclusive breastfeeding up to 6 months</td>
<td>49 (MICS 2008)</td>
</tr>
<tr>
<td>Continuous breastfeeding until at least 12-15 months</td>
<td>74</td>
</tr>
<tr>
<td>Introduction of semi-solid food between 6-8 months</td>
<td>74</td>
</tr>
<tr>
<td>Minimum acceptable dietary diversity 6-23 months</td>
<td>3</td>
</tr>
</tbody>
</table>

Priority attention to breastfeeding in Punjab is justified given that breastfed infants have a lower risk of mortality, lower rates of infection, lower rates of stunting, fewer allergies, and a lower risk of cardiovascular disease as adults. Advantages to breastfeeding women include a lower risk of breast and ovarian cancer, reduced fertility during the period of breastfeeding, better bone density, and a lower risk of hip fractures.

The timely introduction of nutritionally adequate complementary food has been found to be highly effective in improving child growth. However, international assessments of unfortified complementary foods have found that they rarely contain adequate iron, zinc or vitamin B6.

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14 The Lancet Nutrition Series found that 99% coverage of exclusive breastfeeding plus continued breastfeeding up to 12 months of age can reduce under-5 mortality by 13%, while the same coverage of complementary feeding can reduce under-5 mortality by 6% (Lancet, 2008.)
(Dewey KG, 2000.) This argues both for special attention to dietary diversity in the preparation of such foods, and for the consideration of micronutrient powders to increase their nutrient value.

**Education of Girls**

As reflected in Fig 5, education of girls affects each of the underlying determinants of nutrition by permitting them, as women, to make better use of available information and hence more informed choices about child nutrition and health and about self care. Better educated women also have a greater decision making role in the household to permit the implementation of these choices. In some cases, better education for women translates into higher household income.

The female literacy rate in Punjab, 47.4% compares with a figure of 40.7 for the country as a whole. (Literacy among household heads in Punjab is 55.3%.)

**Figure 8: Gender Equity Trends in School Enrollment in Punjab**

As seen in Figure 8 above, female primary school enrollment is 92% which drops to 55% for middle school, both figures below those for males. The Gender Parity Index (GPI) for primary education in Punjab is 0.90 compared to 0.84 for the country as a whole.

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15 It appears, however, that effective information dissemination, increasing knowledge about nutrition and health can compensate, fully or partially, for inadequacies in formal education. Some studies have found that education itself does not have a significant effect on nutrition once health knowledge is controlled for (Glewwe, 1999.)

16 The GPI, in this case, is calculated by dividing the female enrollment rate by the male enrollment rate.
Stunting levels are roughly twice as high in households where mothers are illiterate, compared with those who are better educated, as seen in Figure 9 below.

**Figure 9: Mother’s Education and Child Stunting**

<table>
<thead>
<tr>
<th>Mother’s Education</th>
<th>% of children stunted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>38</td>
</tr>
<tr>
<td>Primary</td>
<td>30</td>
</tr>
<tr>
<td>Middle</td>
<td>27</td>
</tr>
<tr>
<td>Matric</td>
<td>19</td>
</tr>
<tr>
<td>Above Matric</td>
<td>15</td>
</tr>
</tbody>
</table>

**Poverty Alleviation and Social Protection**

Figure 5 identifies inadequate economic resources as a basic determinant of malnutrition affecting each of the underlying determinants. While international evidence indicates that the income-child nutrition relationship itself is modest and not rapid, nutrition gains are possible through social protection programs when they are able to protect families against household shocks and when resources, coupled with counseling are made available to women.

According to the Social Policy and Development Centre (SPDC), 29 per cent of Punjab’s districts are classified as ‘high deprivation’ compared to 50 per cent in Sindh and 92 per cent in Balochistan (SDPI, SDC, WFP, 2009.) Poverty in the province is concentrated in the western and southern parts of the province.

Poverty in Punjab is reflected by the low percentage of household dwellings floors with cement or slake lime floors (49%). The Pakistan Social and Living Standards Measurement Survey of 2011 found that 44% of households surveyed in Sindh believed their economic situation to be “much worse” or “worse” than the year before, while less than 2% believed it to be “better or “much better.”

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17 Higher opportunity costs of education for girls (who are often responsible for household chores and the care of younger siblings and the elderly) and lower investments in girls’ schools increase gender disparities in education in the province. Youth employment, lack of access to schools, lack of quality education, absence of sanitary facilities, malpractice by the teachers, lack of availability of female teachers, and early marriage also contribute to low female enrollment, a high dropout rate and, in turn, a large pool of out-of-school children.
As seen in Figure 10 below, stunting prevalence falls between the lowest and highest wealth quintile. Yet the percentage of stunted children in the wealthiest quintile is 21%, clearly indicating that reducing poverty alone won’t eradicate malnutrition, and that important behavioral issues need to be addressed even among the economically advantaged.¹⁸

![Figure 10: Child Stunting and Wasting by Wealth Quintile](image)

Social protection efforts to generate employment and income and to protect households against the manifestations of poverty and against household shocks (e.g. serious illness and hospitalization), can be particularly useful for nutrition if they are targeted to women. Studies have shown that additional income tends to be spent on food and on family health when women are the recipients of the transfer, and that this increased spending, if the transfer is large enough, can lead to a reduction in levels of malnutrition within the household. Where transfers are conditional, and where health services and/or schools are of adequate quality and able to absorb increased demand, the health services or education provided can, in the longer run pull families out of poverty (Bassett L, 2008.)

The Pakistan Government’s Benazir Income Support Program (BISP) is an unconditional cash transfer program that delivers Rs. 1,000 (US$11) to female beneficiaries in households with a monthly income below Rs. 6,000. In 2010, about 7% of the country’s population was benefiting from the transfers. The BISP also includes microcredit financial assistance, and is pilot testing health and life insurance coverage and vocational skills training (Channa A, 2012.)

The BISP infrastructure – a national database, a network of ATM and point-of-sale terminals, and planned community mobilization days to support registration and enrollment, has particular potential to provide multiplier benefits for nutrition. Among possibilities appropriate for piloting are:

¹⁸ Stunting prevalence in the highest quintile in Punjab, 21%, is higher than the national average for Senegal and for Sri Lanka. And wasting in the highest quintile in Punjab, 13%, approaches the WHO public health emergency level.
• Subsidized distribution of vouchers to BISP’s targeted low income household, enabling beneficiaries to purchase nutrition-related products, e.g. multi-micronutrient powders, soap, water purifiers;

• Utilization of cell phones (owned by 56% of BISP’s beneficiaries) to provide/reinforce key information tailored to pregnancy or early childhood as appropriate.

Conclusions and Recommendations
The data presented above indicate that while intensified action in each of the concerned sectors will reduce malnutrition, no sector alone can reduce malnutrition to the point where it ceases to become a public health problem – and that only in combination are they likely to achieve desired nutrition targets.

At the same time, reductions in malnutrition are likely to lead to benefits for each of the sectors:

• Healthier and more productive farmers
• Better school attendance and improved active learning capacity
• Reduced infectious disease and mortality
• Reduced vulnerability and poverty

The recommendations below relate to (a) interventions, (b) coordination and advocacy, and (c) cross-cutting issues.

Intervention-related Recommendations
Clearly a large number of sector-specific recommendations can be made based on the Punjab information presented above. This Guidance Note, however, seeks to narrow these recommendations to the most critical and the most feasible over the next five year period. Recommendations are organized by sector.

Water, Sanitation and Hygiene

• Create safe environment through total sanitation and hygiene promotion and improved solid waste management by activation of the newly drafted Punjab “total sanitation” policy, utilizing the existing collaboration between the Public Health Engineering Department and the DOH/W&S, and based on the Pakistan Approaches to Total Sanitation (PATS) including waste water treatment.

• Improve nutrition status through rapid activation of the equitable access to water provisions of the Punjab Drinking Water Policy and the Punjab Municipal Water Act designed (a) to assure equitable access to water and to reduce the arduous labor of women in carrying it, (b) to ensure water quality through water treatment projects
and household water treatment and storage, (c) reduce misuse and depletion of ground water, and increase water conservation with increased and improved water storage capacity.

- Raise awareness through community mobilization on sanitation and hygiene through all departments like HUD & PHED, Health, Education, LD & CD etc.
- Incorporate proper operations and maintenance mechanisms in rural and urban water supply and sanitation schemes to ensure proper identification of problems and rapid correction. Quality of water and sanitation system needs to be monitored in urban and rural communities at source as well as at use end on a regular basis.
- Assure adequate treatment of domestic and industrial waste water.
- Restructure WASAs to ensure efficiency and sustainability, and assure adequate funding with annual disbursement plans increasing each year.

Food Security

A) Agriculture

- Constitute Multi-Sectoral Working Group consisting of Agriculturalists, nutritionists and other stakeholders etc to identify the micronutrients for fortification of grain crops at farm as well as mill level.
- Initiate program by providing subsidies on the production of micronutrient-rich plant varieties.
- Encourage breeding programmes for cereals like wheat, rice and maize to develop nutrients efficient plants having availability to response towards the micronutrients uptake.
- Balanced use and enhancement of fertilizer use efficiency, for appropriate NPK ratio. Adopt measures for balanced use of fertilizer so that macro and micronutrients may be made available to the crops in a balanced ratio.
- Provide targeted direct subsidies with special focus on the poor rural population and on women and children
- Shift from traditional agriculture to value added Agriculture and promotion of semi-urban / house hold agriculture / kitchen gardening through friendly policies.
- Capacity building for food processing with minimum nutritional losses and Incentivizing private public partnership
- Promotion of accreditations / international standards and certification of farms, industries and laboratories.
- Pilot testing of crop, livestock and fisheries insurance for low income households
- Intensified bio-technology research on pulses and horticulture crops to facilitate production and consumption diversity, and on crops disproportionately produced and consumed by subsistence farm families.
- Provide subsidies on food, seeds and livestock during emergencies.
B) **Food Department**

- Reduce post harvest losses by building close collaboration with Agriculture Department. Encourage storage of wheat in multigrain silos by Government and private sector.
- Provide targeted subsidies to poor and food insecure population instead of across the board subsidies on wheat. The mechanism for subsidies could be formulated in collaboration with agencies (Like BISP) having appropriate information on below the poverty line population.
- Adopt mandatory fortification of wheat flour with iron and folic acid for all flour mills by making relevant amendment in the legal regime and ensure its enforcement through Food Department and Punjab Food Authority.
- Enhance jurisdiction of Punjab Food Authority to all over Punjab and include team of food nutritionists as part of this authority with clear mandate.

**Utilization of Health Services**

- Review legal regime on breastfeeding, food fortification and salt iodization. Mandatory legislation on oil and ghee fortification with Vitamin A and D, Wheat Flour Fortification with Iron and Folic Acid, and salt fortification with iodine is recommended.
- Plan research studies to implement nutrition interventions, e.g., MAM (pregnant and lactating women and children) and SAM (with and without complications)
- Inclusion of nutrition indicators in District Ranking under DHIS.
- Evidence based Advocacy tools for behavior change communication to address malnutrition.
- Make nutrition education part of school and college curricula. Also include nutrition component as a compulsory part of curricula for all cadres of health care providers.
- Expand opportunities for the post-graduation in nutrition in recognized universities of Punjab.
- Integration of nutrition in disaster and emergency plan.
- Adopt 1000 days plus approach while setting targets.
- Integrate nutrition interventions within existing delivery mechanisms (Horizontal and vertical health programmes)
- Explore existing resources (e.g. for therapeutic foods and local remedies) and increase utilization of existing resources like outreach workers (LHWs, SH&NS etc) for provision of nutrition services and hygiene promotion.
- Adopt gender sensitized approach in planning nutrition interventions.
- Make district specific work plans consistent with provincial plan. Include nutrition services as priority in district and provincial plans.
• Refresher training for all health care providers in priority nutrition service delivery at facility and community levels, and revision of TORs raising the priority of these services.

• Increase measures to promote exclusive breastfeeding for 6 months, dietary diversity for young children, intensified self-care and IYCF counseling of pregnant women and mothers at the community and facility levels.

• Increase coverage of micronutrient supplementation with special attention to current deficiencies in the province, i.e. zinc to children for treatment of diarrhea, iron/folate supplementation for women (of particular importance given present low levels of supplementation in the province), continued twice yearly vitamin A supplementation through National Immunization Days and adopt measures to increase its coverage (critical given that Punjab has the highest rate of vitamin A deficiency in the country), multi-micronutrient powders for young children and increased coverage of salt iodization. Supplementation levels should be consistent with local deficiencies.

• An intensified, province-wide focus on healthy pregnancies and, in turn deliveries, increasing ANC coverage and iron-folate distribution, improved food intake and reproductive health counseling;

• High quality dissemination of priority nutrition messages via media and through utilization of mobile phones.

• Establishment of health targets from the mother’s perspective, i.e. a Women Focused Approach (WFA); and the designation of a provincial “goodwill ambassador for nutrition” to help put nutrition higher on the provincial government agenda.

Education

• Improved school enrollment and attendance for girls; nutrition and life skills counseling and weekly iron tablets for all adolescent girls.

• Initiation of efforts to improve the nutritional health of adolescent girls including those out of school via weekly iron folate distribution, health/nutrition counseling and life skills counseling.

• Area and ethnic-specific orientation and training of school teachers on creative inclusion of nutrition in teaching.

• Increased female school enrollment, retention and attendance by addressing existing constraints and through incentive provision adequate to compensate for high opportunity costs.

• Ensure the provision of healthy nutritious food in school canteens using also micronutrient fortified commodities, and ban junk food.

• Develop and include nutrition, health, hygiene education modules in schools, capacity building programs and education curriculum.
• Ensure daily physical activity for school children
• Introduce deworming in schools
• Introduce annual Nutrition Days in schools and communities, and arrange parents’ meetings to improve student health
• Increase opportunities for professional level degree and post-graduate courses in nutrition to fill gaps in public sector specialist provision.
• Establishment of Nutrition and Dietetic Council to ensure quality, parity, skills and core competencies development and registration of nutrition and dietetic professional education programs at higher education level.

**Poverty Alleviation and Social Protection**

• Existing policies/legislation should be made more nutrition-responsive.
• Increase coordination between federation and federating units on nutrition-sensitive social protection
• BISP targeting of women in the poorest 20% of households in the province through Proxy Means Test (PMT) scoring verified by checks and balances system, and service provision (cash transfers via vouchers and assistance from BISP women community leaders) designed to give these women the opportunity to shift behavior and resources toward investment in themselves and in young children while permitting more time for child care. Link the cash transfer with evident based nutrition need.
• Cash transfer amounts should be linked to provincial food price indices so that real value remains constant.
• Conduct research intervention to assess the impact on improving nutrition through cash transfer scheme (BISP data could be used), and implement impartial program monitoring with third party validation.
• Develop and strengthen linkage with LHWs, SH&NS, teachers, local NGOs for promoting social aspects of addressing malnutrition.
• Integrate nutrition intervention in the entire existing programs of social welfare department with women and children focussed approach. Screening through School Health and Nutrition Supervisors, response in coordination with health department could be initiated. Initiate awareness campaign on nutrition for communities and for people targeted through social welfare department.
• Include chapter on nutrition in the curriculum of training school working under social welfare department.
• Mapping of districts through impartial surveys, and utilization of this data to strengthen nutrition interventions of social welfare department.
• Utilization of social protection platforms for nutrition message dissemination
• Piloting of a conditional cash transfer program using vouchers and linked to the utilization of health and nutrition services by target population groups, while being
particularly attentive to supply side constraints which may be encountered by these groups

**Coordination and Advocacy**

It is anticipated that a mechanism for coordination, the identification of responsible individuals in each department of sector, and a coordinated monitoring and evaluation plan for strategy implementation will emerge from the Provincial Integrated Nutrition Strategy (PINS) process which is underway with government departments and donor agencies committed to collaboration. A Multisectoral Steering Committee already has been formed with the Chairman P&D as the chairman of the committee. A multisectoral technical working group (TWG) has also been notified. Under the technical working group, six subgroups have been notified for working closely with each department to make their policy more nutrition responsive.

Multisectoral experience in nutrition from countries like Nepal, Afghanistan, Thailand, Peru and Brazil confirms that such a centrally-placed coordination mechanism is imperative for ‘planning multisectorally, implementing sectorally, and reviewing programs multisectorally’. The Multisectoral Steering Committee should be equipped to manage horizontal integration across sectors and vertical integration among levels of government. The Committee requires results-based monitoring tools and perhaps results based budgeting, focusing not solely on provincial “average” figures but also e.g. on poorest wealth quintiles. The technical working group and subgroups could play a vital role in assisting the multisectoral steering committee.

The Multisectoral Steering Committee will seek to strengthen government commitment to nutrition and to multisectoral nutrition processes. The planned political economy analysis in the province should be helpful in these respects.

**Attention to Cross-Cutting Issues**

**Gender**

As is clear from information presented in the Brief, gender-related issues are important determinants of nutrition, some of the most important being (a) the inadequate food intake (quantity and quality), inadequate health service access and the arduous labor of many women, particularly pregnant women affecting pregnancy outcomes including birthweights and, in turn, the nutritional status of young children, and (b) inadequate education of girls and low female literacy adversely affecting food consumption, health care, hygiene and sanitation and food production choices and decision making.

Given Punjab’s high maternal mortality, the low service provision for women, and the serious levels of food insecurity, the highest priority gender and nutrition-related
recommendations are the following which reinforce the intervention recommendations presented above:

- An intensified, province-wide focus on healthy pregnancies and, in turn deliveries, increasing ANC coverage and iron-folate distribution, improved food intake and reproductive health counseling;
- Improved school enrollment and attendance for girls; nutrition and life skills counseling and weekly iron tablets for all adolescent girls; and
- Prioritized agricultural extension services for women designed to increase the efficiency of their work and reduce arduous labor.

**Private Sector**
While the primary focus of this guidance note is on the role of the provincial government and its development partners, it should be clear that there is an important role for the private sector in these multisectoral efforts to reduce malnutrition in the province. The private sector has a particularly important role to play in the food chain, in producing micronutrient and therapeutic food supplements, in increasing soap accessibility and promoting hygiene behaviors, in food fortification in behavioral change efforts through media. Recommended is the following:

- A process of consultation and discussion between provincial government and private sector representatives to explore mutually beneficial means of addressing the recommendations contained in this guidance note, particularly in those areas identified in the preceding paragraph
- Active consideration of engagement of private sector medical practitioners and facilities in efforts to prevent and treat malnutrition.
References


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Appendix: Overweight and Obesity in Pakistan

The NSS 2011 found that 28.8% of Pakistani aged 15-49 are overweight or obese, a figure surprisingly high for a country of Pakistan’s economic status, and one with serious implications in terms of medical consequences.

Analysis done on an earlier Pakistan data set (the National Health Survey, 1990-94) found a prevalence figure of 25% for Pakistani women and men over the age of 15 and through multivariate analysis found the factors independently and significantly associated with overweight and obesity to be greater age (highest among women aged 35-54 years), being female, urban residence (obesity was 2.5 times greater among urban residents), being literate, having a high economic status and a high intake of meat (Jafar T et al, 2006.)

A preliminary analysis carried out on the NSS 2011 data, explored the possibility that a significant portion of the overweight and obesity found might be explained by the Barker hypothesis suggesting that one of multiple biologic consequences of fetal and early malnutrition can be an inability by the body to oxidize fat properly (Barker D, 1997.) This was examined by looking at the association between overweight and obesity in pregnancy and stunting in young children in the same family. Although the aggregate analysis found no statistically significant association, it remains likely that a significant percentage of lower income overweight and obese women suffered themselves from fetal or young child malnutrition.

The analysis, however, found that overweight and obesity are disproportionately concentrated in higher income groups and among better educated women (these two variables themselves being closely associated.) Of women who are overweight or obese, 30.6% are in households with a monthly household income of Rs. 20,000 or more, while among underweight women, only 14.7% are in this high income bracket. Similarly, of women who are overweight or obese, 28.2 are “matric” or “above matric” while among underweight women, only 11.8% have that level of education (Chi square: p=<.001.) Preliminary analysis also found that 59.1% of underweight women suffer from moderate or severe compared with 44.6% for women who are overweight and obese. See Table 4 below.

<table>
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<th>Table 4: BMI Status by Education, Income and Anemia Indicators</th>
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<tr>
<td><strong>Matric + Above Matric</strong></td>
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<tr>
<td><strong>Average Monthly Income Rs. 20,000+</strong></td>
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<td><strong>Moderate + Severe Anemia</strong></td>
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*Chi square p=<.001

Priorities for future inquiry would be attitudinal research on Pakistani women (and men) seeking to understand motivations relating to ideal body size, the associations made between
these ideals and food consumption, and present understandings that exist about the consequences of overweight and obesity among this population; and also further disaggregated statistical analysis on overweight and obese women from lower income groups.