Acceptability of peanut-based RUTF to malnourished pregnant and lactating women in Bangladesh

Summary of research

Location: Bangladesh

What we know: Malnutrition prevalence is high among pregnant and lactating women in Bangladesh. Nutrition rehabilitation programmes use peanut-based RUTF in their treatment, however acceptability and tolerance in this population group is poorly researched.

What this article adds: A cross-sectional study was conducted by MSF to assess acceptability and tolerance of peanut RUTF amongst 248 pregnant and lactating women attending two MSF supported primary health care centres in an urban slum in Bangladesh. While the majority appreciated the therapeutic benefits, 22% rejected peanut based RUTF completely and the remaining 78% found it unacceptable (undesirable taste, smell and side effects). Thirty-nine per cent reported side-effects. This explained the MSF programme experiences which had high loss-to-follow-up and non-responder rates. Thirty three per cent found the instructions inconspicuous and 8% could not read them. Ways forward include concerted effort for alternative formulations of RTUF based on local pulses, preferences and awareness of adult palatability needs.

Malnutrition prevalence among pregnant and lactating women (PLW) in Bangladesh is one of the highest in the world. The Demographic Health Survey in 2007 showed that 30% of women of childbearing age (15–45 years) were undernourished (Body Mass Index (BMI) <18.5).

One of the commonly used Ready to Use Therapeutic Foods (RUTF) in Africa is Plumpy’nut® (PPN; Nutriset, Malaunay, France). Médecins Sans Frontières (MSF) implemented a PPN-based nutrition programme for malnourished PLW in Kamrangirchar slum setting in Dhaka, Bangladesh. During implementation, many women complained of the taste and peanut-associated smell of PPN. The programme also experienced a high loss-to follow-up rate (25–30%) and a high non-responder rate (32–35%) despite women being on PPN for a period up to five months.. A study was therefore conducted to assess acceptability and tolerance of PPN among PLW in Kamrangirchar slum in Bangladesh.

Method

The study involved a cross-sectional survey using a semi-structured questionnaire. It was conducted between May and July 2011 in Kamrangirchar, an urban slum setting in Dhaka, Bangladesh. The slum has an estimated population of 400,000 inhabitants living within an area of 3.1 km2. MSF health services in Kamrangirchar were provided through two primary health care (PHC) clinics. The nutrition programme for PLW started in August 2010. The study included all PLW who were either malnourished or at risk of malnutrition, and who had received PPN for at least 4 weeks at the time of the study.

PLW were admitted to the nutrition programme if they were found with severe acute malnutrition (SAM) [mid-upper arm circumference (MUAC) <170 mm or the presence of severe nutritional oedema ≥ grade three] or were at risk of malnutrition (MUAC<210 mm). Based on the measured MUAC threshold, PPN daily dose was prescribed (one to three packs per day) for 2–5 months. Along with the nutritional support, PLW were offered antenatal and postnatal care.
Nutritional follow-up assessments were done monthly within the community. Women who recorded complete rejection of PPN were switched to another RUTF (BP100 – high-energy biscuit bars). Women were discharged from the programme when they attained a MUAC >220 mm, oedema less than grade two and were assessed as being of good clinical status for at least two consecutive visits. PLW who did not recover after receiving PPN for five months were switched to a multiple micronutrient powder (MNP) supplement.

A semi-structured questionnaire was used to gather socio-demographic information, perceptions of PPN (taste, smell, consistency, colour, side effects), packaging, consumption of PPN (accepted readily, forced to ingest it, rejected completely), general appreciation of PPN and suggestions to improve it. Independent home visits were arranged to conduct the interviews. PPN was considered acceptable if PLW did not perceive problems of undesirable taste, smell, colour, consistency or side effects at any time during the course of intake. Unacceptability was defined if PLW perceived any of the previously mentioned problems, felt that they were being forced to take PPN, or completely rejected PPN after four weeks of intake.

**Results**

A total of 248 women [median age 20 years, interquartile range (IQR) 18–24] were interviewed. The majority (99.6%) were at risk of malnutrition on admission with a median MUAC of 202 mm (IQR 196–206). Overall, 161 (65%) women were pregnant and 87 (35%) were lactating. Nearly 30% were illiterate while the remainder had a mean of four years education (SD 3.24). The overall median period of PPN intake was 16 weeks (IQR 10–20). At interview, 134 (54%) women were receiving PPN, 101 (41%) were switched to MNP and 13 (5%) to BP100.

Fifty-five (22%) women accepted PPN completely. The remaining 193 (78%) found PPN unacceptable, of whom 12 (5%) completely rejected PPN after four weeks of intake. The remaining 181 (73%) found PPN unacceptable because of undesirable taste, unwelcome smell or attributed side effects and stated that they forced themselves to take PPN. Overall, 149 (60%) women found the PPN taste unacceptable while 107 (43%) found the smell unwelcome – more than half complaining of the peanut-based smell. In an attempt to compensate for the unacceptable taste and smell, 133 (54%) mixed PPN with water and seven (3%) mixed it with other food such as chapatti and rice. A total of 97 (39%) women reported at least one side effect attributed to PPN, which included nausea (27%), vomiting (19%), diarrhoea (8%), abdominal distension (7%) and abdominal pain (3%). Most of the reported side effects were higher among pregnant than lactating women. Despite the mentioned limitations in PPN acceptability, 212 (85%) women perceived PPN to be beneficial as a therapeutic product for improving general health.

The majority (99%) of women found PPN package easy to open. Overall, 146 (59%) understood the illustrated instructions on the package, 81 (33%) found the instructions inconspicuous and 21 (8%) said they were illiterate. The majority (79%) felt that the overall PPN acceptability should be improved – 82% of them desired a change in taste and 48% desired a change in smell.

This study shows that despite a perceived therapeutic benefit, eight of every 10 PLW receiving PPN for nutritional rehabilitation in a slum setting in Bangladesh found problems related to RUTF acceptability.

**Conclusions**

The findings of this study raise a number of important considerations related to PPN acceptability. First, the fact that 60% of women found the taste of this ‘food product’ unacceptable is concerning. A considerable proportion also complained of its peanut-based smell. In Bangladesh, lentils constitute the main ‘pulse’ in the basic daily diet. Although peanuts are available in the local markets and are inexpensive, they are not used routinely as part of a Bangladeshi diet. The use of peanut as a core constituent in PPN needs to be re-examined, as undesirable taste and smell of any RUTF is likely to adversely influence acceptability and adherence, which eventually impact
nutritional outcomes. Second, 39% of women attributed side effects to PPN intake, and these were higher among pregnant than lactating women. This issue merits further assessment and research. Third, 41% of women found the illustrations on the package inconspicuous and incomprehensible, which highlights the need to find more suitable ways of communicating the ‘instructions for use’ in such communities.

The ideal way forward would be the development of a RUTF that is adapted to adult’s expressed palatability preferences and based on locally available pulses. However, the nutritional contents of such recipes need to be carefully assessed for their potential use for therapeutic rehabilitation in PLW. The authors conclude by urging nutritional agencies and therapeutic food manufacturers to intensify their effort towards developing more RUTF alternatives with improved palatability and smell for adults, and with adequate therapeutic contents for treating malnourished PLW in Bangladesh.
