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Food assistance to tuberculosis patients: lessons from Afghanistan

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Poverty, food insecurity and poor nutrition in the population are important contributors to the burden of tuberculosis (TB). For poor and food-insecure individuals, accessing and successfully completing anti-tuberculosis treatment over an extended period of time is challenging. Food and nutritional support as an incentive and enabler is employed by national TB control programmes (NTPs) worldwide as a means to encourage treatment initiation and adherence and to improve the nutritional status of patients with TB. It also offers a safety net for food-insecure households affected by TB to mitigate the financial consequences of the disease. This paper reports on the primary lessons from the review of the World Food Programme's (WFP's) Food Assistance Programme for TB patients in Afghanistan. It aims to inform the design, implementation and scale-up of TB programmes in settings where food insecurity and malnutrition are prevalent. It also documents qualitative findings that suggest that patients, their families and providers viewed food support as an important asset and an essential element of the national TB control strategy. While the impact on treatment success or case detection could not be quantified, it is likely that the WFP intervention had a positive impact on the patients and their households, therefore contributing to the success of the DOTS-based NTP.

Tuberculosis (TB) not only remains a significant and preventable cause of morbidity and mortality globally,[1] it is also a major cause of poverty aggravation, as people with TB often face the double burden of reduced income and increased expenses,[2,3] they are often too sick to work and their families have to pay expenses associated with treatment.[4] Catastrophic health expenditure by TB patients is therefore a common consequence of TB diagnosis, treatment and care,[5,6] and has been found to be associated with adverse TB outcomes.[7] This often leads to a worsening of food insecurity for patients and their families during the course of the disease.[8–10]

Food insecurity and poor general nutritional status in the population are important contributors to the burden of TB disease,[11–13] as not only does malnutrition increase the risk of progression from tuberculous infection to active TB disease, but low body mass index (BMI) (<18.5 kg/m^2) and lack of adequate weight gain with anti-tuberculosis treatment have also been found to be associated with an increased risk of death.[14]

For individuals who are poor and food-insecure, accessing and successfully completing anti-tuberculosis treatment over an extended period of time (usually 6–8 months for drug-susceptible disease) is often challenging.[15,16] Maximising treatment adherence is crucial, however, not only for the individual but also for the community, to reduce transmission and avert the risk of generating drug-resistant strains.

Adherence to treatment, and therefore successful treatment completion, is determined by a complex array of issues, which includes factors relevant to socio-economic status, health systems, the disease, treatment and individual patient traits.[17] Food interventions/assistance are adherence support strategies that may affect treatment completion via socio-economic factors (by helping to mitigate the effect of poverty), health-system factors (by making attendance at health centres more 'attractive'), and factors related to the disease and to the treatment (by removing barriers related to the complexity of the medication regimen, emotional distress and stigma, or intentional non-adherence due to adverse drug reactions).[18] Figure 1 summarises the suggested pathways by which food assistance can contribute to treatment success.

Despite the fact that evidence of the magnitude of the effect of food assistance on TB case detection, treatment adherence and outcome in different contexts remains scanty,[19] food and nutrition support as an incentive and enabler is employed by national TB control programmes (NTPs) worldwide as a means of encouraging treatment initiation and adherence, by helping to mitigate the socio-economic costs associated with TB, improving the nutritional status of TB patients and offering a safety net for food-insecure households affected by TB.[20] In addition, the use of poverty-alleviation strategies, such as cash and food transfers, in the global response to TB is now a key element of the recently endorsed World Health Organization (WHO) End TB Strategy, based on the links between poverty/food insecurity and TB incidence and treatment outcome.[21]

Afghanistan has a high prevalence of malnutrition and micronutrient deficiencies, it is one of the world's 22 TB high-burden countries, and it has one of the highest TB rates in the region.[22] Food support to TB patients and their households was introduced in 1997 in Afghanistan and brought to scale in 2002 when treatment using directly observed therapy (DOT) was initiated. Until April 2013, all patients notified to the NTP and enrolled in DOT were provided with monthly food parcels for households of six beneficiaries. The United Nations food assistance organisation, the

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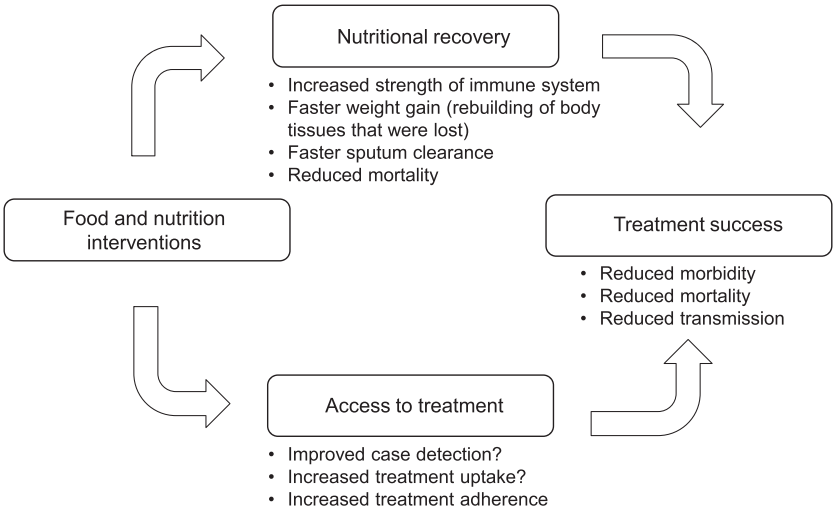

FIGURE 1 Pathways through which food assistance can contribute to treatment success. Adapted from de Pee S, Grede N. Food and nutrition assistance in TB programming: rationale and practice. Symposium 'Action on the social determinants of tuberculosis: are social protection interventions the way forward?' London, UK: LSHTM, 2012. http://tbsymposium.lshtm.ac.uk/files/2012/02/Nils-Grede.pdf Accessed May 2016 [unpublished]

World Food Programme (WFP, Rome, Italy), provided most of the financial and logistics support for the intervention nationwide during this decade.

Deteriorating security conditions since 2010 have made the WFP operations in the country increasingly challenging. A review of the WFP activities portfolio in 2012 led to the decision to discontinue its TB activities the following year, and at the beginning of 2013 an external review of the TB Food Assistance Programme was commissioned. This paper reports on the main lessons from this assessment, thus informing the design, implementation and scale-up of TB programmes in settings where food insecurity and malnutrition are prevalent.

Tuberculosis situation

Estimated TB incidence in Afghanistan remained relatively stable between 2000 and 2014, at approximately 189 per 100 000 population. The case detection rate gradually increased from 19% (uncertainty range 18–21%) in 2000 to 53% (uncertainty range 47–60%) in 2014. Mortality rates have been declining steadily since 1998, but appear to have increased in the past 2 years (Figure 2).[1]

At the national level, data from routine NTP reports show that treatment success rates (cure or treatment completed) have been high since 1999 (Figure 3),[1] while the proportion of patients who were lost to follow-up, failed treatment or died during treatment appears to have decreased since the introduction of the DOTS strategy and the concurrent implementation of food assistance by the WFP (Figure 3).

METHODS

The programme review adopted a mixed-method approach that triangulated qualitative data obtained through in-depth interviews and focus group discussions (FGDs) with stakeholders and an ecological analysis of secondary programmatic data provided by the WFP and the WHO Country Office and local partners. Verbal consent was received from the participants in the FGDs and the other stakeholders, in line with WFP policy on monitoring and evaluation.

FINDINGS

Features of the Food Assistance Programme

The Food Assistance Programme had three specific objectives: 1) to increase the adherence of TB patients to DOT and improve the anti-tuberculosis treatment success rates, 2) to increase TB case detection rates by supporting households affected by TB, and 3) to mitigate increased vulnerability to food insecurity among TB-affected households.[2,3]

Every individual diagnosed with TB and started on DOT was eligible to receive food assistance, irrespective of their nutritional status or food security situation, sex or socio-economic status. There was also no distinction made among the various clinical manifestations of the disease.

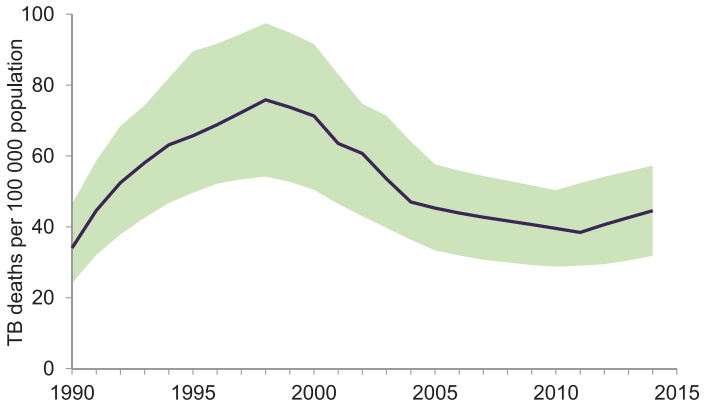

FIGURE 2 Estimated TB mortality (HIV-positive and HIV-negative), Afghanistan, 1990–2014. TB = tuberculosis; HIV = human immunodeficiency virus.

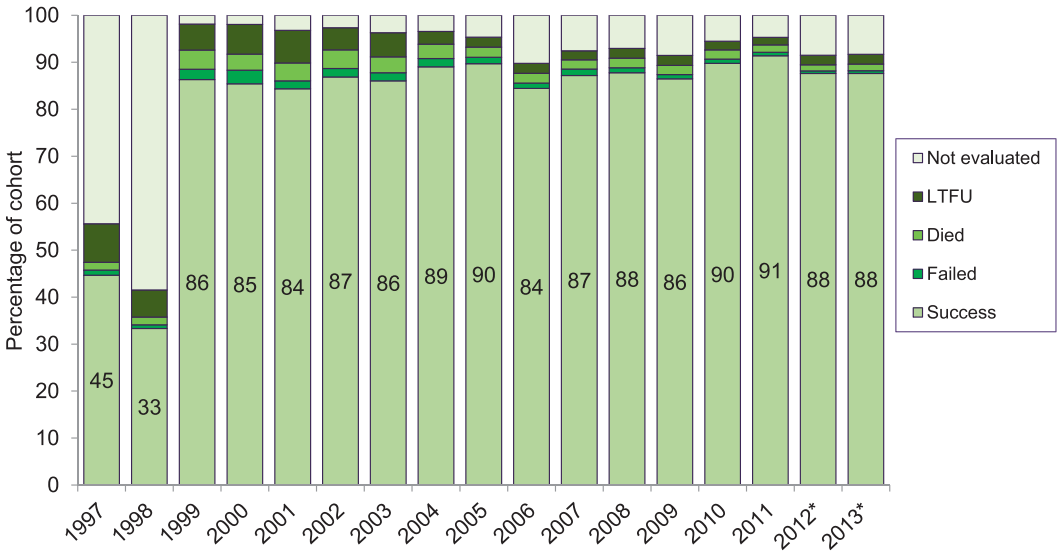

FIGURE 3 Treatment outcomes in new TB cases, by annual cohort, Afghanistan, 1997–2013 cohorts. *The 2012 and 2013 treatment cohorts include both new and relapse cases (previous years include only new cases). LTFU = lost to follow-up; TB = tuberculosis.

Throughout the 8-month period of treatment, patients with TB were given a monthly take-home food ration comprising 278 g/person/day of wheat, 21 g/person/day of vegetable oil, 44 g/person/day of pulses and 3 g/person/day of iodised salt for six persons (irrespective of the actual household size), which provides 1348 kcal of energy per person per day. This ration was meant to contribute as much as 60% of the minimum required energy for an average person.

The WFP arranged the delivery of the food commodities to the health facilities where patients received their treatment. In 2011, there were approximately 1197 DOT facilities in all 34 provinces. Food was distributed to out-patients on a fixed day, which was often different from the patient's medicine day. The patients received on-site meals in the clinics where they were hospitalised for the first 2 months of treatment, then received the take-home rations on a monthly basis over the remaining 6 months of treatment.

Food was distributed either directly by the Ministry of Public Health (MoPH)/NTP, or by non-governmental organisations (NGOs) contracted by the MoPH to implement the Basic Package of Health Services. Health 'shuras', comprising elders from the surrounding community, provided support for the distribution of the food and the identification of beneficiaries within the catchment area of the health facility. Local community elders also facilitated food delivery in areas that faced insecurity.

Food support was conditional on treatment adherence during the previous month. The monthly distribution of food at the health facility was attended by WFP field monitors who also conducted follow-up interviews with a random selection of beneficiaries. The TB register was used to verify patient lists and the stock balance sheet was reviewed. Food ration cards were also checked against the TB register to prevent individuals posing as patients from receiving the food.

Intervention coverage

The estimated need for anti-tuberculosis treatment in Afghanistan increased steadily from 2004 to reach nearly 29 000 estimated individuals with active TB disease in 2007. The Table indicates that there was consistent, although not complete, underprovision of food assistance between 2004 and 2011, with the exception of the years 2004 and 2010, which experienced overprovision of food

TABLE TB Food Assistance Programme coverage, 2004–2012*

Year	TB clients *n*	Beneficiaries *n*	TB patient notifications *n*	Proportion of TB patients receiving WFP food assistance %
2004	24 031	144 186	18 405	130.6
2005	17 400	104 400	22 207	78.4
2006	25 000	150 000	26 138	95.6
2007	21 534	129 204	28 769	74.9
2008	23 369	140 214	28 301	82.6
2009	24 549	147 294	26 358	93.1
2010	39 903	174 690	28 236	141.3
2011	23 707	142 241	28 167	84.2
2012	23 609†	141 654†	NA	NA

*Sources: World Health Organization, Geneva, Switzerland; World Food Programme, Rome, Italy, Standard Project Reports 2004–2012.
†Data for the 2012 Standard Project Report are provisional.
TB = tuberculosis; WFP = World Food Programme; NA = non-applicable.

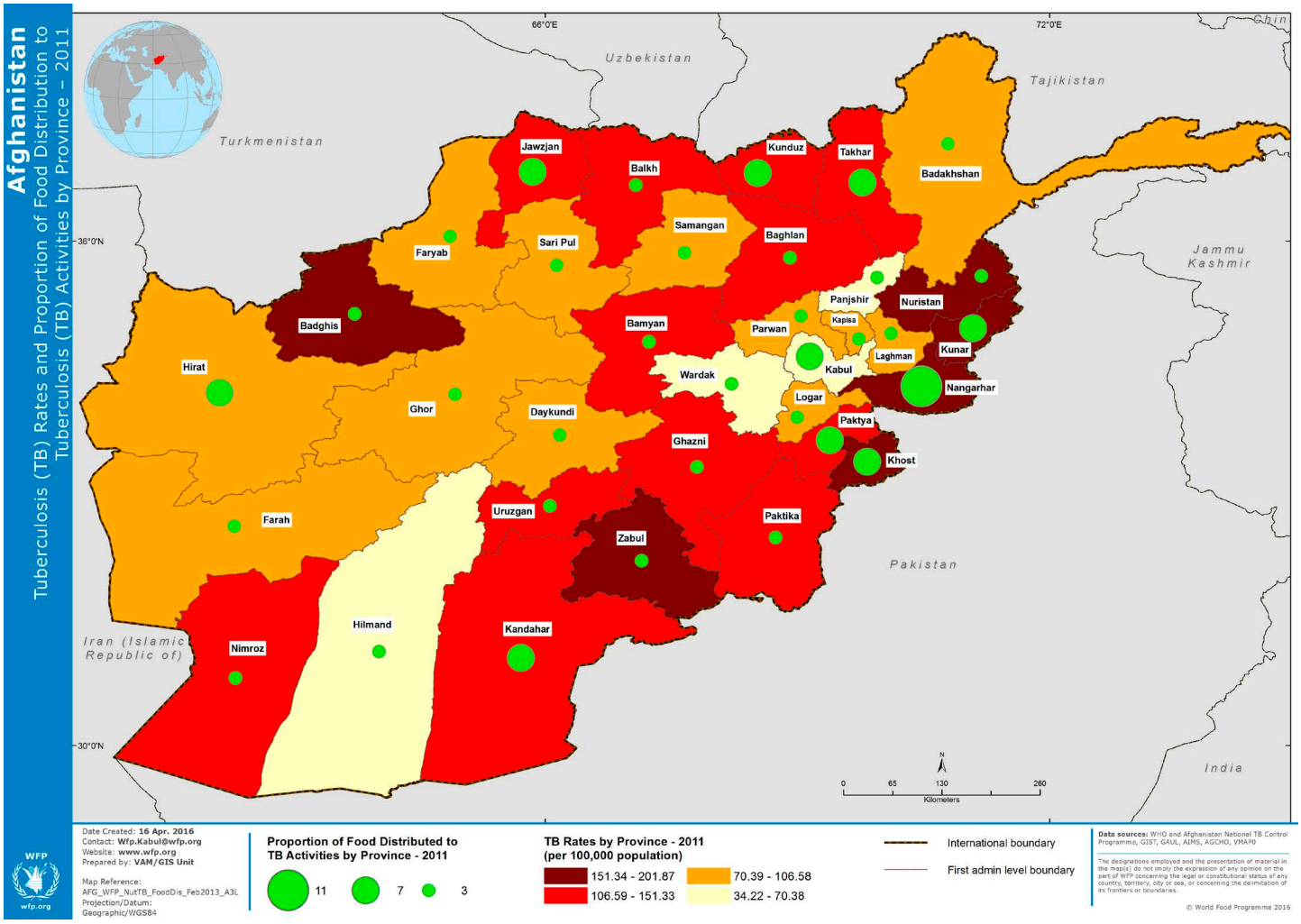

FIGURE 4 Proportion of food distributed to TB activities and TB rates by province, Afghanistan, 2011. TB = tuberculosis.

(Table). This was found to be due mainly to an inaccurate case prediction system rather than a lack of adequate resources.

Programme data show that the programme achieved considerable coverage at national level, while at regional level coverage varied more widely between regions and over time.

Food allocation vs. tuberculosis burden

To assess whether the food assistance had been directed towards those areas of the country most affected by TB, we compared the distribution of food against TB rates by province (Figure 4). Given the lack of individual-level data, it is difficult to ascertain whether or not the programme had an effect in individual provinces; the data indicate, however, that there were discrepancies between the number of TB patients and the food allocated in different regions, with provinces such as Zabul and Khost receiving a far higher proportion of allocated food than their TB caseload required.

Impact of the intervention on the beneficiaries

Four FGDs were conducted with female and male TB patients separately at Wazi Akbar Khan Hospital in Kabul and at the TB Centre in Kandahar. Patients who took part in the FGDs were participating in the programme at the time of the review and were aged 12–78 years. The number of members in the households of the participants ranged from 12 to 23; most were unemployed.

The majority of the participants had initially sought assistance at a private health facility and were then referred to a public or NGO health centre. The transport costs for patients to attend the health centre to receive anti-tuberculosis treatment varied between US$2 and US$4 per person per day. When patients took their food rations home, these costs doubled, adding to the financial burden of TB.

The beneficiaries interviewed and their family members appreciated the food, and the majority felt they would be unable to cope with the strain of supporting a sick person were it not for the food. Those interviewed were generally happy with the composition of the WFP food basket. While some patients would have liked to receive additional items such as rice, sugar and milk, there was a general consensus that the commodities included in the food ration were widely consumed and culturally acceptable in Afghanistan. Patients uniformly confirmed that without food assistance they would be less able to stay in treatment and that the food assistance reduced the impoverishing effects of TB and facilitated cure.

Given the high number of household members, most patients reported that the quantity of food provided by the WFP was insufficient to meet the dietary requirements of the whole family for an entire month. The participants denied having to sell any items in their food basket to pay for transport or other costs asso-

ciated with their TB treatment. Female TB patients highlighted the fact that the food ration played an extremely important role in their household economy, while serving as an empowering means to better care for their families.

Finally, the WFP data show a dramatic increase in the household food consumption score, from 6.9% in 2008 to 21% in 2011.[24]

Operational challenges

The procurement of food and its distribution were the greatest challenges facing the WFP and the NTP. Similar to all the non-specialised commodities procured by the WFP for its programmes in Afghanistan, around 70% of the commodities included in the food baskets for TB patients were imported through the Pakistan corridor, 25% were imported through the northern corridor (Uzbekistan and Iran), while only 5% were purchased locally. Over the years, the TB programmes suffered from pipeline breaks and stock-outs, especially in wheat, which beneficiaries and the implementing partners interviewed found problematic, although not overly burdensome.

The storage and distribution of food in clinics was perceived as challenging by MoPH/NTP staff, as health facilities are often not equipped with storage facilities and re-packaging food items for distribution was also costly.

The clinic and WFP area office staff reported that in contested areas of the country such as Kandahar, beneficiaries found by insurgents with containers of food bearing the logos of the International Security Assistance Force (ISAF) member states could be at serious risk and be placed in mortal peril.

Treatment outcomes are systematically monitored, as they are part of routine NTP surveillance, and there is good data recording at the health facilities overseen by the NTP. Outcome data and anthropometric screening for TB patients were not, however, linked to the receipt of food. Closer collaboration between the WFP, the WHO/NTP and provincial health districts would have improved the accuracy of the annual planning figures and measurement of the impact of the intervention.

DISCUSSION

While this review could not quantify the impact of the food assistance programme on case detection and treatment success, the qualitative data gathered during the appraisal seem to suggest that the WFP interventions were successful in reducing the pressures of disease on household food security and the household economic situation by providing family rations to TB patients through the treatment centres.

Food assistance in the form of culturally appropriate food is an effective adjunctive therapy to enhance adherence to and completion of anti-tuberculosis treatment as well as household food security.[25–27] While various foods and nutritional supplements are being used in TB programmes in many settings,[20] and have been advocated by the WFP and the Joint United Nations Programme on HIV/AIDS (UNAIDS),[28] evaluations of the impact of such initiatives remain scarce.

This paper contributes qualitative evidence from the assessment of one of the largest and oldest food transfer programmes to TB patients globally. This study has a number of limitations, however, as a rigorous evaluation of the intervention faced multiple challenges. While all those consulted praised the WFP, an active monitoring and evaluation system would have allowed more direct measurement of the impact of the Food Assistance Programme by linking the records of food receipts to TB outcomes on an individual level, for example. As they are based on province-level data, all of the results apply to the population level. Furthermore, trends in the main TB indicators reported in this paper indicate overall good performance of the TB programme in Afghanistan, but do not allow us to draw any conclusions about correlations between food assistance and treatment outcomes or case detection. Because of the concurrent implementation of the DOTS strategy with food support and the near-simultaneous expansion of both programmes, it is difficult to obtain data that allow a valid comparison of outcomes with and those without food support.[29]

Despite these limitations, our results provide insight into the potential for collaboration between different health programmes to reduce the burden of TB. Afghanistan is one of the few countries in the world where food support has been given to TB patients on such a broad scale. As in other settings, however, the poor quality of programmatic data severely constrained the evaluation of the intervention. Important evidence, such as the effects of food assistance and other enablers on TB treatment access and adherence (or other health indicators), could be gathered by improving the quality of the data collected by both health systems as well as humanitarian and development agencies as part of ongoing monitoring of their activities. The wealth of country experience and data represents an accessible source of evidence that should be systematically and rigorously assessed to identify those operational features that are most suited to each setting and TB epidemic.

A structured inventory to extract the common themes and document existing initiatives from different settings should therefore be the first operational research tool for cross-country comparison.[20] Information to collect during this exercise may include the design and implementation strategy of interventions, their costs, coverage, targeting and monitoring mechanisms, and potential for scale-up. This could help identify effective models of synergy between health programmes and implementers such as development agencies.

CONCLUSIONS

It is likely that food assistance has contributed to the success of the DOTS-based programme in Afghanistan. In settings where food security is a barrier to accessing care and adhering to treatment, food supplementation is an obvious enabler for TB patients. While providing a crucial entry point for outreach to vulnerable populations, food support acts as a safety net for food-insecure households and helps achieve financial protection against catastrophic costs related to anti-tuberculosis treatment. As the focus of TB care and prevention shifts towards social and structural determinants,[30] data from TB programmes such as that in Afghanistan are critical to inform policy discussions and programme design and to learn to overcome challenges in monitoring and evaluation practices.

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La pauvreté, l'absence de sécurité alimentaire et une nutrition médiocre de la population contribuent largement au poids de la tuberculose (TB). Pour les patients pauvres et ayant du mal à assurer leur alimentation, avoir accès au traitement pour la TB et le suivre sur une longue période jusqu'à la guérison est un défi. Un soutien alimentaire et nutritionnel, qui sert à la fois d'incitation et de facilitateur, est utilisé par les programmes nationaux de lutte contre la TB (PNT) dans le monde comme moyen d'encourager la mise en route du traitement et son adhésion ainsi que d'améliorer l'état nutritionnel des patients tuberculeux. C'est également un filet de sécurité pour les foyers souffrant d'insécurité alimentaire et affectés par la TB afin d'atténuer les conséquences financières de la maladie. Cet article rapporte les premières leçons acquises lors de la revue de l'aide alimentaire du Programme Alimentaire Mondial (PAM) aux patients TB d'Afghanistan. Il a pour objectif d'aider la conception, la mise en œuvre et l'extension des PNT dans les zones à prévalence élevée d'insécurité alimentaire et de malnutrition. Il documente également les résultats qualitatifs qui suggèrent que les patients, leurs familles et les prestataires ont vu l'aide alimentaire comme un atout important et un élément essentiel de la stratégie de lutte contre la TB. Même si l'impact sur le succès du traitement et sur la détection des cas n'a pu être quantifié, il est probable que l'intervention du PAM a eu un impact positif sur les patients et leurs foyers, contribuant par là au succès du PNT basé sur la stratégie DOTS.

La pobreza, la inseguridad alimentaria y la nutrición deficiente de la población son factores que contribuyen de manera importante a la carga de morbilidad por tuberculosis (TB). Acceder al tratamiento de la TB y lograr completarlo durante un período prolongado plantean grandes dificultades a las personas pobres, que sufren de inseguridad alimentaria. Los programas nacionales contra la TB (PNT) utilizan el apoyo alimentario y nutricional como un incentivo y un medio facilitador, con el objeto de estimular la iniciación del tratamiento, reforzar el cumplimiento terapéutico y mejorar la situación nutricional de los pacientes con TB. Estas iniciativas constituyen además una red de seguridad para los hogares que sufren de inseguridad alimentaria y están afectados por la TB, pues menguan las repercusiones económicas de la enfermedad. En el presente artículo se analizan las principales experiencias aprendidas al analizar la ayuda alimentaria a los pacientes con TB del Programa Mundial de Alimentos (PMA) en Afganistán. Su meta consistió en fundamentar los objetivos, la aplicación y la ampliación de escala de los PNT en los entornos donde prevalecen la inseguridad alimentaria y la desnutrición. El estudio documentó además los hallazgos cualitativos que sugieren que los pacientes, sus familias y los profesionales de salud consideran el apoyo alimentario como un recurso importante y un elemento primordial de la estrategia nacional de control de la TB. Si bien no fue posible cuantificar la repercusión de la intervención en el éxito terapéutico ni en la detección de casos, es muy probable que la iniciativa del PMA tenga repercusiones positivas en los pacientes y sus hogares y contribuya de esta manera al éxito del PNT que se basa en DOTS.

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