

審査の結果の要旨

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This thesis aimed to identify the effectiveness of nutrition training of health workers on child undernutrition in global context and efficacy among HIV-positive children in Tanga, Tanzania. In this thesis, systematic reviews aimed to review the evidence on the effectiveness of nutrition training of health workers on their nutrition knowledge, skills, and competence to manage child undernutrition; and on feeding practices such as feeding frequency, energy intake, and dietary diversity of young children. The field studies aimed to examine the magnitudes of HIV-positive children's undernutrition and its associations with poor feeding practices; and the efficacy of nutrition training of midlevel providers (MLPs) on nutrition indicators of HIV-positive children in Tanga, Tanzania.

The systematic reviews found that:

1. Twenty-five out of 3,910 studies were eligible for analysis in the first systematic review. Of 25 studies, 18 showed that the nutrition training was effective to improve health workers' nutrition knowledge. Their nutrition counseling skills were also improved after the training in 12 studies. Finally, the training also improved their skills to manage child undernutrition in 16 studies.
2. The second systematic review analyzed the data of 10 randomized studies out of 4,757 articles. Nutrition training of health workers improved children's energy intake [standardized mean difference (SMD) 0.76, 95% CI (0.63-0.88)], and feeding frequency [SMD of 0.48 (95% CI 0.38-0.58)]. Narrative synthesis showed that children in the intervention arm were more likely to consume more diverse diets compared to their control group counterparts.

Field studies revealed that:

1. HIV-positive children had higher magnitude of stunting (61.9%), underweight (38.7%), wasting (26.0%), and thinness (21.1%), in Tanga, Tanzania. Their lower feeding frequency was associated with stunting ($\beta=0.11$, $p=0.016$), underweight ($\beta=0.12$, $p=0.029$), and thinness ($\beta=0.11$, $p=0.026$).

2. Nutrition training of MLPs improved their nutrition knowledge scores post-training compared to pre-training (37.1 vs. 23.5, $p < 0.001$). This intervention improved feeding frequency ($\beta = 1.17$, $p < 0.001$) and dietary diversity ($\beta = 1.12$, $p < 0.001$) of the HIV-positive children. After six months of the intervention, a net mean weight gain of 300g was observed among the children of the intervention arm. As a result, underweight fell from 33.2% to 22.6%. Such improvement was not obvious in the control arm.

The systematic reviews and field studies showed that nutrition training can improve knowledge and child undernutrition management skills of the available health workers. It can also improve children's feeding frequency, dietary diversity, and energy intake. This intervention is essential even in areas that rely on less qualified MLPs, in the context of HIV infection, and in places where undernutrition is common. This thesis concludes that, the nutrition training of MLPs can improve their nutrition knowledge, and feeding practices and nutrition status of HIV-positive children.