Review

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Agriculture, food, and nutrition interventions that facilitate sustainable food production and impact health: an overview of systematic reviews

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ABSTRACT

Objectives. *To identify the agriculture, food, and nutrition security interventions that facilitate sustainable food production and have a positive impact on health.*

Methods. *Systematic review methods were used to synthesize evidence from multiple systematic reviews and economic evaluations through a comprehensive search of 17 databases and 10 websites. The search employed a pre-defined protocol with clear inclusion criteria. Both grey and peer-reviewed literature published in English, Spanish, and Portuguese between 1 January 1997 and November 2013 were included. To classify as "sustainable," interventions needed to aim to positively impact at least two dimensions of the integrated framework for sustainable development and include measures of health impact.*

Results. *Fifteen systematic reviews and seven economic evaluations met the inclusion criteria. All interventions had some impact on health or on risk factors for health outcomes, except those related to genetically modified foods. Impact on health inequalities was rarely measured. All interventions with economic evaluations were very cost-effective, had cost savings, or net benefits. In addition to impacting health (inclusive social development), all interventions had the potential to impact on inclusive economic development, and some, on environmental sustainability, though these effects were rarely assessed.*

Conclusions. *What is needed now is careful implementation of interventions with expected positive health impacts but with concurrent, rigorous evaluation. Possible impact on health inequalities needs to be considered and measured by future primary studies and systematic reviews, as does impact of interventions on all dimensions of sustainable development.*

Keywords Sustainable development; sustainable agriculture; food and nutrition security; nutrition, public health; review, systematic; Sustainable Development Goals.

Sustainable development is defined as, "development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (1). Sustainable development is supported by three pillars—economic, social, and environmental—where health is both an outcome of, and a precondition for, all three pillars (2).

The United Nations Conference on Sustainable Development that took place in Rio de Janeiro, Brazil, in 2012 (Rio+20 Conference) produced a focused, policy outcome document, "The Future We Want" (2). It contains clear and practical measures for implementing sustainable development (2) and informed the United Nations (UN) Member States' decision to develop a set of Sustainable Development Goals that build upon the Millennium Development Goals and converge with the Post-2015 Development Agenda.

As part of the preparation for the Rio+20 Conference, the UN System Task

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Team on the Post-2015 UN Development Agenda prepared a report to the Secretary General entitled, "Realizing the Future We Want," that contained an integrated framework for sustainable development (3). The framework assumes three core values: human rights, equality, and sustainability; and four key dimensions built on the three pillars of sustainable development: inclusive social development, inclusive economic development, environmental sustainability, and peace and security. Policies relating to food and nutrition security are seen as an "enabler" in the framework. Enablers are indicative of each of the four dimensions, yet supportive to all (3). Food and nutrition security are also specifically mentioned within the key dimensions of "inclusive social development" (adequate nutrition for all) and "inclusive economic development" (eradicating income poverty and hunger). The relationships among agriculture, environment, health, and food security, as well as possible solutions, are beginning to be discussed in a range of international forums (4 – 7), including as part of the new Sustainable Development Goals (2).

This overview of the systematic review and economic evaluation literature (along with three related overviews) were developed by PAHO to inform the development of the new Sustainable Development Goals, particularly to provide Member States with evidence for the possible impact of policies and programs in non-health sectors (e.g., agriculture, environment, international development, economic) on health. It also has the potential to demonstrate interrelationships between the key dimensions of sustainable development. While various systematic reviews have been conducted on topics relevant to each of the key dimensions of sustainable development, an advantage of an overview like this is that it provides decisionmakers with a broader summary of the evidence than is possible, from a single systematic review (8 – 10).

The objective of this overview was to use the best available evidence to answer the following question: What are the agriculture, food, and nutrition security interventions that facilitate sustainable food production and have a positive impact on health? Sub-questions considered were: What is their impact on health inequalities? What evidence is there for their cost-effectiveness? Which dimensions of the integrated framework are affected by the intervention and how?

MATERIALS AND METHODS

This overview used systematic review methodology to locate and evaluate published systematic reviews of interventions. It adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (11). A systematic review protocol was written and registered prior to undertaking the searches (12).

Inclusion criteria

Studies were selected based on the following inclusion criteria:

Types of studies. Systematic reviews of studies of effectiveness, including reviews of randomized controlled trials (individuals or clusters), quasi-randomized controlled trials, controlled before-and-after studies, interrupted time series, and analytic observational studies (cohort, case-control, cross-sectional studies). Economic evaluations (cost-effectiveness, cost-utility, and/or cost-benefit) and systematic reviews of economic evaluations were included.

Types of participants. Studies of individuals, groups, communities, countries, or regions. Studies from both developed and developing countries were included.

Types of interventions. Agriculture, food, and nutrition security interventions that aim to facilitate sustainable food production were included. Interventions could include the use of taxes, subsidies, public procurement schemes, fiscal incentives, and agricultural policy and practices to promote sustainable food production. To classify as "sustainable" interventions needed to aim (explicitly or implicitly) to positively impact on at least two dimensions of the integrated framework, e.g., environmental sustainability and inclusive social development (which includes health) or environmental sustainability and inclusive economic development (but where impact on health was also measured). Demand-side interventions were excluded.

Types of comparisons. Comparisons included no intervention, another intervention, or current practice.

Types of outcome measures. Primary outcomes included: health measures at the level of the individual, group, community, country, region, and/or globally, including: disease incidence, prevalence, burden; mortality; morbidity; health service use; health-related costs; and health-inequalities, including by gender, age, life stage, area of residence, etc.

Language and study period. Publications in English, Spanish, and Portuguese published from 1 January 1997 – November 2013 were included. Both grey and peer-reviewed literature was sought and included.

Sources of systematic reviews and economic evaluations

A comprehensive search of 17 databases and 10 websites was conducted. Systematic reviews were searched for in the following databases: PubMed, Embase®, CINAHL, ASSIA, ScienceDirect, LILACS, SciELO, GreenFILE, AGRICOLA, AGRIS, Food Science and Technology Abstracts (FSTA®), The Cochrane Library Plus (including Cochrane Reviews, the Database of Abstracts of Reviews of Effects, the Health Technology Assessment database, and Reports from health technology assessment Spanish agencies), The Campbell Library, and Health-Evidence™.

The websites searched were sources that specialize in systematic reviews, and other relevant websites: the Effective Public Health Practice Project, the Evidence for Policy and Practice Information and Coordinating Center, the National Institute for Health and Care Excellence, the Community Guide, 3ie–International Initiative for Impact Evaluation, SAX Institute Evidence-check Library, the World Health Organization (including WHOLIS and IRIS), Food and Agriculture Organization of the United Nations, Food Research and Action Center (United States), and Google. The bibliographies of all systematic reviews that were included were also searched.

For economic evaluations, three specialized databases were searched: Paediatric Economic Database Evaluation, EconLit, and NHS Economic Evaluation Database.

Search strategy

Searches were conducted from 16 – 24 November 2013. Databases were searched using the keywords listed in Table 1,

searched for in the title and abstract, except where otherwise stated. Keyword areas were joined using "AND." Searches were limited to humans and with a publication date between 1 January 1997 and the day of the search. Results were downloaded into EndNote, version X7 (Thomson Reuters, New York, NY, United States). Duplicates were removed.

Screening, data collection, and analysis

Searches were conducted and screened according to the selection criteria, by one review author (MH). The full text of any potentially relevant papers was retrieved for closer examination. The inclusion criteria were applied against these papers independently by two reviewers (MH and RC). Disagreements regarding eligibility of studies were resolved by discussion and consensus. All studies that initially appeared to meet the inclusion criteria, but on inspection of the full text paper did not, are detailed in Supplementary File 1, together with reasons for their exclusion. One reviewer extracted all relevant data from included papers (MH) using a standard form. A second reviewer verified the extracted data (RC). Differences were resolved by discussion and consensus. Data/information extracted from systematic reviews included: objectives, inclusion criteria for the systematic review, date of search, number of studies included, country or region of included studies, details of interventions studied, the dimensions of the integrated framework that the individual studies attempted to impact (implicitly or explicitly), summary of findings in relation to health, impact on any of the key dimensions of sustainable development, impact on health inequalities, impact on secondary outcomes, impact on human rights, limitations of the systematic review, research gaps, and critical success factors for the interventions.

Findings from the included publications and their methodological quality were synthesized using tables and a narrative summary. Meta-analysis was not possible because included studies were heterogeneous in terms of the types of intervention studied and outcomes measured.

Assessment of methodological quality

The methodological quality of included systematic reviews was assessed independently by two reviewers using AMSTAR: A Measurement Tool to Assess Reviews (13). For this overview, reviews that achieved AMSTAR scores of 8 – 11 were considered to be of high quality; scores of 4 – 7, medium quality; and scores of 0 – 3, low quality. These cut-offs are commonly used in Cochrane Collaboration overviews. The review quality assessment was used to interpret the results of reviews when synthesized in this overview and in the formulation of conclusions.

TABLE 1. Identification of studies on agriculture, food, and nutrition interventions that facilitate sustainable food production and impact health: key word areas for searching and sample search strings, 1997–2013

Keyword areas	Details
Agriculture, food, or nutrition	food OR drink OR beverage OR nutrition OR agriculture OR crop (OR farm$ OR livestock)[a]
Interventions	program OR policy OR policies OR strategy OR legislation OR law OR intervention OR technique OR planning OR practice OR fiscal OR regulation OR sustainable OR tax* OR subsid* OR procurement OR incentive
Outcomes	disease OR burden OR incidence OR prevalence OR mortality OR morbidity OR health*
Systematic reviews	"systematic review" OR "meta-analysis"

Sample search string for Embase (Ovid)

((food OR drink OR beverage OR nutrition OR agriculture OR crop).ti,ab,kw.) AND
((program OR policy OR policies OR strategy OR legislation OR law OR intervention OR technique OR planning OR practice OR fiscal OR regulation OR sustainable OR tax$ OR subsid$ OR procurement OR incentive).ti,ab,kw.)

AND

(("systematic review" OR "meta-analysis").ti,ab,kw.) AND
((disease OR burden OR incidence OR prevalence OR mortality OR morbidity OR health$).ti,ab,kw.) AND
limit to (human and yr="1997 – 2014")

Source: Developed by the authors.

[a]These keywords were used for non-health databases only.

RESULTS

Fifteen systematic reviews (from 17 articles) (14 – 30) and seven economic evaluations (31 – 37) met the inclusion criteria for the overview. The selection process for systematic reviews and the numbers at each stage are shown in Figure 1. The 38 papers that were excluded at full-text stage are shown in Supplementary File 1. Following data extraction and analysis, the funders of the study identified that no systematic reviews on genetically modified foods had been included. However, they were able to find six potential systematic reviews relevant to the topic of genetically modified foods. Of these, four were excluded for not meeting the inclusion criteria (Supplementary File 1). The seven additional articles identified in Figure 1 include these six systematic reviews, plus one found by chance when searching PubMed for systematic reviews for a related overview on sustainable energy (30).

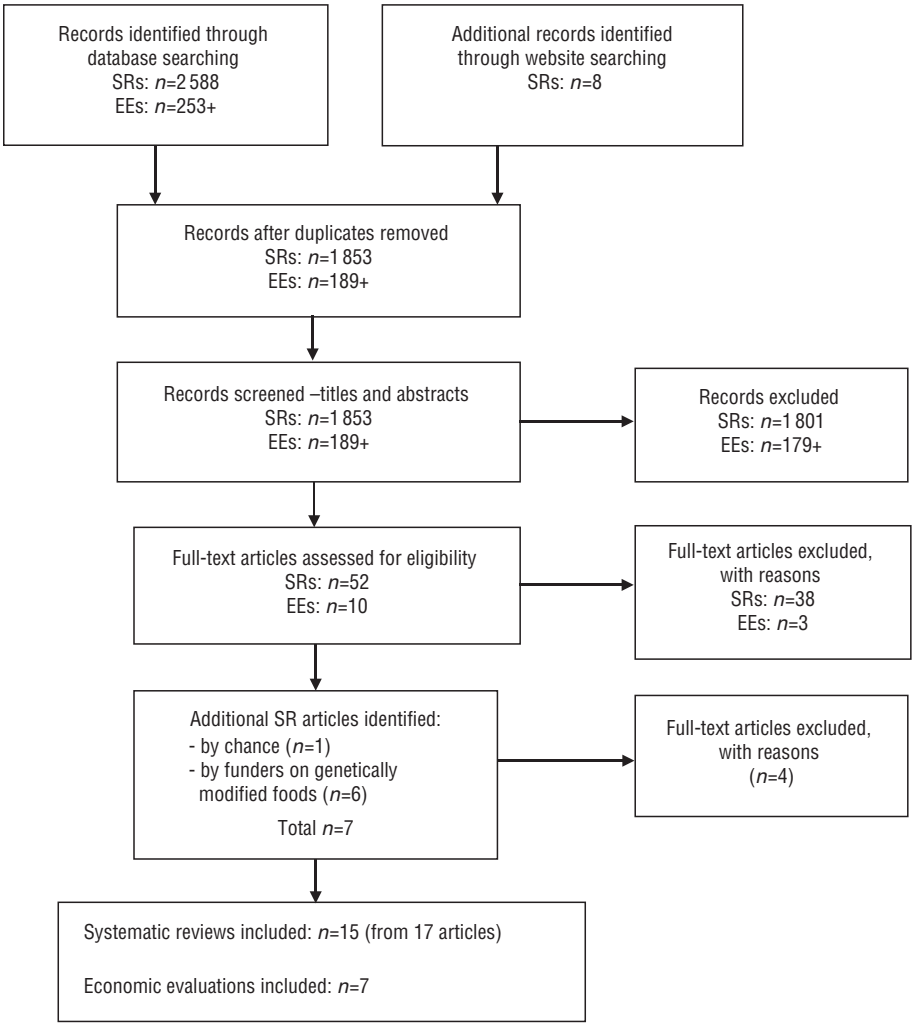
The selection process for economic evaluations and the numbers at each stage are also shown in Figure 1. After examination of the full text, three potential economic evaluations were excluded due to interventions (38, 39) or outcomes (40) that did not meet the inclusion criteria.

Characteristics of included studies and quality assessment

The types of interventions studied and their potential connection with the four key dimensions of the integrated framework for sustainable development are shown in Table 2. Further details of the characteristics of the included systematic reviews and economic evaluations can be found in Supplementary Files 2 and 3, respectively. AMSTAR scores ranged from 1 – 9. Three systematic reviews (16, 17, 21) were of high quality, scoring from 8 – 11 points; eight (14, 15, 18, 19, 22, 25, 29, 30) were of medium quality, scoring from 4 – 7; and four (23, 24, 26, 27) were considered low quality, scoring from 0 – 3. AMSTAR scores are shown in Supplementary File 2.

Effectiveness. All interventions for which there are systematic reviews and/or economic evaluations have some impact on health or risk factors for health outcomes (bio-fortification, agriculture interventions that aim to increase household food production; organic farming/diet; reduction in meat production and

FIGURE 1. Flow diagram of the number of records identified, included, and excluded in the search for systematic reviews (SRs) and economic evaluations (EEs) on agriculture, food, and nutrition interventions that facilitate sustainable food production and impact health, 1997–2013



Source: Produced by the authors from study data. Flow diagram adapted from Moher, et al. (11).
Note: For one of the economic evaluation databases (Paediatric Economic Database Evaluation), keywords needed to be searched one at a time, thus, it is not possible to know the exact number of references found nor the number of duplicates.

consumption; and agriculture policies) with the exception of genetically modified foods (Table 3).

While the evidence for these interventions is not strong (i.e., not based only on high quality systematic reviews of randomized controlled trials), there is no evidence of a definite negative impact on health, except in the case of taxes and subsidies, where some higher quality primary studies suggested that unintended compensatory purchasing could result in overall effects running counter to health (17). However, these findings need to be balanced against the finding that food taxes and subsidies may have a higher relative impact on lower income groups, thus having the potential to be pro-equity. In the case of genetically modified foods, the evidence is insufficient to determine whether their consumption has positive, negative, or no impact on human health.

Cost-effectiveness

There is some evidence that sustainable food production interventions have the potential to be cost-effective, and at times, cost-saving (Table 3). While all of the cost-effectiveness analyses conducted have limitations, including a lack of evidence for effectiveness of many interventions and poor reporting of some model parameters, the results for the economic credentials of the interventions are promising. Bio-fortification of rice and wheat and aflatoxin control strategies in maize and groundnuts are very cost-effective interventions, while taxes and subsidies and strategies to combat acidification and ozone are potentially cost saving or have net benefits.

Impact on health inequalities

With the exception of the systematic reviews on taxes and subsides, no other systematic reviews reported impact on health inequalities; thus, impact is not known. For the high quality systematic review on taxes and subsidies, it was found that food pricing strategies have the potential to reduce health inequalities (17).

Dimensions of the integrated framework for sustainable development

Given the inclusion criteria, all interventions aimed to have an impact on inclusive social development, which includes health. Most interventions also had the potential to impact on inclusive economic development and/or environmental sustainability (Table 2), however these potential effects were rarely assessed in the included systematic reviews (exceptions are discussed in greater detail in the two paragraphs that follow). It is possible that environmental and economic effects of the interventions were assessed in systematic reviews, but unless the systematic review also attempted to assess health outcomes, the paper would not have met the inclusion criteria.

In regards to inclusive economic development, the systematic reviews of agriculture interventions that aim to increase household food production confirmed that these interventions generally had a positive effect on production of the agricultural goods being promoted (14, 21), though the impact on household income remains unclear (21). Regarding strategies to combat acidification and ozone, the modelling included an increase in crop production (due to reductions in acidification), which would have economic outcomes (33).

In regards to environmental sustainability, the assumed environmental benefits of strategies for combatting acidification and ozone were modelled under three different scenarios (33). With

TABLE 2. Interventions studied and potential connections with the key dimensions of the integrated framework for sustainable development[a], 1997–2013

Intervention	Number of systematic reviews (SR) and economic evaluations (EE)	Inclusive economic development	Environmental sustainability	Inclusive social development	Peace and security
Agriculture interventions that aim to increase household food production, including home gardens, livestock (poultry, fish), dairy (goats, cattle), cash cropping, irrigation	3 SRs (14, 21, 29)	✓	✓	✓	x
Organic farming / diet	2 SRs (16, 25)	✓	✓	✓	x
Reduction in meat production and consumption	1 SR (30)	✓	✓	✓	x
Bio-fortification of maize, rice, or wheat	1 SR (18) 2 EEs (35, 36)	✓	x	✓	x
Genetically modified foods	2 SR (19, 26) 1 EE (36)	✓	✓	✓	x
Agriculture policies, including output price policies, public distribution policies, trade liberalization policies	2 SRs (15, 22)	✓	x	✓	x
Taxes and subsidies	4 SRs (17, 23, 24, 27) 3 EEs (31, 32, 34)	✓	x	✓	x
Strategies to combat acidification and ozone	1 EE (33)	✓	✓	✓	x
Aflatoxin control strategies in maize and groundnuts	1 EE (37)	✓	x	✓	x

Source: Produced by the authors from the study data.
[a]Potential impacts on the key dimensions can be negative or positive.

TABLE 3. Details of interventions studied, quality of the evidence, and results, 1997–2013

Intervention	Level of development of countries	Quality of systematic reviews	Impact on health	Cost-effectiveness
Agriculture interventions that aim to increase household food production, including home gardens, livestock (poultry, fish), dairy (goats, cattle), cash cropping	Developing	2 medium 1 high	Inconsistent impact on morbidity and nutrition outcomes (including vitamin A status and anemia) (14, 21, 29) Positive impact on stunting, underweight and wasting, but not significant (21, 29)	–
Organic farming / diet	Developed	1 medium 1 high	No evidence of impact on health, but may reduce exposure to pesticide residues and antibiotic-resistant bacteria (16, 25)	–
Reduction in meat production and consumption	Mostly developed	1 medium	Burden of disease could be reduced by 1% – 16% (30)	–
Bio-fortification of maize, rice, or wheat	Developing	1 medium	12% (95% Confidence Interval [95%CI]: 7% – 18%) increase in the rate of growth in weight and a 9% (95%CI: 6% – 15%) increase in the rate of growth in height (18)	Very cost-effective (35, 36)
Genetically modified foods	Developed, developing	1 low 1 medium	Insufficient evidence to determine whether genetically modified foods have positive or negative effects on human health or not (19, 26)	Potentially very cost-effective if modelled health effects are realized (36)
Agriculture policies, including output price policies (OPP), public distribution system policies (PDSP), and trade liberalization policies	Developed, developing	2 medium	Possible small effect on overnutrition for OPP and PDSP (15) Trade liberalization policies had mixed effects (22)	–
Taxes and subsidies	Mostly developed	1 high 3 low	The systematic reviews suggest largely positive impacts on health (17, 23, 24, 27), though some of the higher quality primary studies included in the high quality SR suggested unintended compensatory purchasing may result in negative impacts on health (17)	Potentially cost-saving (31, 32, 34)
Strategies to combat acidification and ozone	Developed	–	–	Net benefits (33)
Aflatoxin control strategies in maize and groundnuts	Developing	–	–	Very cost-effective (37)

Source: Produced by the authors from study data.

genetically modified foods, although there are concerns about possible negative impacts on environmental sustainability—including loss of biodiversity and increased use of chemicals in agriculture (41)—they were not measured by any of the included systematic reviews.

None of the included interventions were assessed by the reviewers as having the potential to impact on peace and security.

DISCUSSION

The agriculture, food, and nutrition security interventions that facilitate sustainable food production and have a positive impact on health or risk factors for health outcomes include: bio-fortification of maize; agriculture interventions that aim to increase household food production; organic farming and diet; reduction in meat production and consumption; and agriculture policies. For genetically modified foods, there was insufficient evidence to determine whether their effect on human health is positive or negative. The impact of the interventions on health inequalities is also unknown, with the exception of taxes and subsidies—food pricing strategies have the potential to reduce health inequalities. Regarding cost-effectiveness, there is evidence to suggest that bio-fortification of rice and wheat and aflatoxin control strategies in maize and groundnuts are very cost-effective interventions; while taxes and subsidies are also potentially cost saving; and strategies to combat acidification and ozone have net benefits.

By their very nature, sustainable food production interventions can have positive impacts on more than one dimension of the integrated framework for sustainable development. As well as impacting health (inclusive social development), most interventions had the potential to impact on inclusive economic development and/or environmental sustainability, though these effects were rarely assessed in the included systematic reviews.

While no direct evidence was found in this overview for interrelationships between the key dimensions of sustainable development, other evidence for the included interventions suggests that this is likely; for example, organic food production and reduction in meat production can both help reduce the environmental impacts of acidification (42).

Implications for policy

While there has been a call from most authors of systematic reviews for more and better quality research on the interventions included in this overview, a balanced approach is needed. Acting on imperfect information can have costs if the intervention is implemented incorrectly and not evaluated well. However, waiting for more research also has costs, including the cost of the research itself and the cost of not acting. What is needed now is careful implementation of interventions likely to make a positive impact—as pilot studies, where appropriate—and rigorous evaluation of their implementation using adequately powered methods. Potential adverse impacts should also be measured. If evaluation of the implemented interventions or pilot studies is done well, it will contribute to the research evidence and inform future action.

In regards to taxes and subsidies, strategy design and implementation must ensure that there is no compensatory purchasing that results in negative impacts on health. This may be achieved by balancing taxes on unhealthy foods with subsidies on healthy foods (17), and by taxing certain food groups (e.g., cakes, cookies, candy, soft drinks) or more processed foods rather than single nutrients (27).

For genetically modified foods, further research is needed to determine whether these foods have beneficial or harmful effects on human health. Care needs to be taken to ensure that they are free of conflicts of interest (43). Moreover, all studies must be made available to the general public—whether positive or negative—so that a fair impact assessment can be made.

Sectors involved. An original aim of this overview of the literature was to determine with which sectors the health sector should engage in order to promote sustainable food production. Unfortunately, none of the included studies specified which sectors were involved in the delivery of interventions. To facilitate policy development, the review authors deduced which sectors were involved from the researchers' affiliations and any funding organizations. The resulting information is provided in Table 4 to enable discussion and policy development, but is open to debate. Collaboration across sectors to design, implement, and evaluate sustainable food production interventions, will likely result in greater benefits for all involved.

Integrated strategies. Packages of one or more complementary interventions were not directly studied in any of the systematic reviews, and no relevant findings were included in their results. However, these may be more likely to be successful.

Implications for research

Authors of the included systematic reviews call for more and higher quality research across the range of interventions, including integrated strategies. This research can be done in the context of implementation, where appropriate. Further research is also needed on interventions types where no systematic reviews or economic evaluations were found; for example: increasing support to farmers' markets and urban and peri-urban agriculture (6); regulation of food production processes that impact on public as well as occupational health, such as excessive use of agrochemicals and use of antibiotics as growth promoters (44); and organic and fair trade price premiums and procurement programs that favor sustainable agricultural products, such as school feeding programs (45).

TABLE 4. Sectors involved in sustainable food production interventions, 1997–2013

Intervention	Agriculture	Health	Environment	Economic	International development
Agriculture interventions that aim to increase household food production	✓	✓			✓
Organic farming / diet	✓	✓	✓		
Reduction in meat production and consumption	✓	✓	✓		
Bio-fortification of maize, rice or wheat	✓	✓			✓
Genetically modified foods	✓	✓	✓		
Agriculture policies	✓	✓		✓	✓
Taxes and subsidies	✓	✓		✓	
Strategies to combat acidification and ozone	✓	✓	✓		
Aflatoxin control strategies in maize and groundnuts	✓	✓			

Source: Created by the review authors from the author affiliations and funding organizations of the included systematic reviews and economic evaluations.

Limitations

It should be noted that this overview had key strengths, namely, its use of systematic review methodology guided by the Cochrane Handbook (46) and the AMSTAR quality tool (13) and its comprehensive search. Publication bias could not be assessed quantitatively because a meta-analysis could not be conducted; furthermore, no clear methods are available for assessing publication bias qualitatively (47). The quality of the included systematic reviews was generally good, with the majority (11 reviews of 15) receiving a score of medium or high. Of the four, low-scoring systematic reviews, three studied taxes and subsidies (23, 24, 27), but preference was given to results of a recent, high quality systematic review (17). The fourth low-quality systematic review looked at the effect of genetically modified foods (26). Despite there being a medium quality systematic review available (19), the evidence was insufficient to determine whether genetically modified foods have a positive, negative, or no effect on human health.

A possible limitation of this overview was the inclusion criteria used for intervention types. There is no universally agreed-upon definition that could be applied. Therefore, while the criteria used could be seen as subjective, the use of a multidisciplinary group of researchers that included reviewers with content knowledge of food production, environmental issues, and/or sustainable development issues should sufficiently overcome any concerns. Also, when applying the intervention type inclusion criteria, the reviewers erred on the side of inclusiveness rather than exclusiveness.

Another limitation was that the interventions included were limited to those for which a systematic review or economic evaluation had been conducted, even if primary studies were available. Furthermore, the systematic review or economic evaluation had to report health outcomes, thus precluding systematic reviews that only reported changes in environmental, economic, or peace and security outcomes.

CONCLUSIONS

What is needed now is careful implementation of interventions whose impacts are likely to be positive, along with rigorous evaluation. Collaboration across sectors will likely result in greater benefits for all involved. The possible impact on health inequalities needs to be considered and measured in future primary studies (and systematic reviews), as do the impact of interventions and combinations of interventions on all dimensions of sustainable development, and potential adverse impacts. For genetically modified foods, further research is needed to determine whether these foods have beneficial or harmful effects on human health.

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RESUMEN

Intervenciones agropecuarias, alimentarias y nutricionales que favorecen la producción sostenible de alimentos e inciden en la salud: síntesis de revisiones sistemáticas

Objetivos. Definir las intervenciones agropecuarias, alimentarias y relativas a la seguridad nutricional que favorecen la producción sostenible de alimentos y tienen efectos positivos sobre la salud.

Métodos. Se utilizaron métodos de revisión sistemática para sintetizar los datos obtenidos de múltiples revisiones sistemáticas y evaluaciones económicas mediante una búsqueda amplia en 17 bases de datos y 10 sitios web conforme a un protocolo predefinido que constaba de criterios de inclusión claros. La búsqueda incluyó tanto bibliografía gris como arbitrada publicada en inglés, español y portugués entre el 1 de enero de 1997 y 1 de noviembre del 2013. Se consideraron "sostenibles" las intervenciones que tuvieron efectos positivos en al menos dos dimensiones del marco integrado para el desarrollo sostenible y que evaluaron los efectos sobre la salud.

Resultados. Cumplieron con los criterios de inclusión 15 revisiones sistemáticas y 7 evaluaciones económicas. Todas las intervenciones tuvieron algún efecto sobre la salud o sobre los factores de riesgo de algunos resultados en materia de salud, a excepción de aquellas relacionadas con los alimentos transgénicos. Muy pocos estudios determinaron el efecto de las intervenciones sobre las desigualdades en materia de salud. Todas las intervenciones sometidas a evaluaciones económicas fueron muy eficaces en función de los costos, redujeron los costos o lograron beneficios netos. Además de incidir en la salud (en la dimensión "desarrollo social inclusivo"), todas las intervenciones podrían influir en la dimensión "desarrollo económico inclusivo" y algunas sobre la dimensión "sostenibilidad ambiental", aunque estos efectos fueron evaluados en muy pocas revisiones sistemáticas.

Conclusiones. La ejecución cuidadosa de las intervenciones cuya aplicación prevé efectos positivos para la salud debe acompañarse de una evaluación rigurosa. Es preciso tener en cuenta y evaluar, mediante futuros estudios primarios y revisiones sistemáticas, tanto los posibles efectos sobre las desigualdades en materia de salud como las repercusiones de las intervenciones en todas las dimensiones del desarrollo sostenible.

Palabras clave Desarrollo sostenible; agricultura sostenible; seguridad alimentaria y nutricional; nutrición en salud pública; revisión; Objetivos de Desarrollo Sostenible.