Salt iodization has been one of the most successful public health nutrition interventions of the past decades, significantly improving the intake of iodine and preventing iodine deficiency disorders. To achieve this, national iodization programs have focused primarily on iodization of household salt. However, in most regions of the world, dietary consumption patterns are shifting towards increased use of industrially-processed foods and condiments. The consequence of this change is that industrially processed foods account for an increasing proportion of total salt intake. The presence and level of iodine in these foodstuffs is, however, often not known and not considered in the design and monitoring of national salt iodization programs. As such, little is known about the actual or potential contribution of iodized salt used in the manufacture of processed foods and condiments to iodine intake. The objective of this review was to obtain an improved understanding of the contribution of processed foods and condiments to salt intake, the extent to which they are made with iodized salt and hence the actual and potential contribution of processed foods and condiments to iodine intake.

We undertook a comprehensive review of both published and grey literature documenting experiences with the use of iodized salt in processed foods and condiments.

Salt iodization programs. Processed foods now provide the main source of salt intake in many countries. For example, 71, 95 and 71% of sodium is consumed through processed foods in Japan, United Kingdom and the United States respectively. In industrialized countries, processed foods contributing most to salt iodization are often bread and processed meat. In less developed countries, salt-containing condiments are often used in place of table salt and cooking salt and contribute significantly to salt intake, such as soy sauce, fish sauce, fermented fish paste and salty brine. In Southeast Asia or bouillon cubes in Africa. A small survey in Viet Nam in 2010, found that household salt contributed only 6% to total sodium intake. However, the use of soy sauce and soy sauce have been estimated to be consumed by 80% and 90% of the Cambodian population. In Senegal, 95% of women of reproductive age reported consuming bouillon as part of their daily diet, and in China, more than half of salt used in food processing was iodized. In China a 2010 review found that only about one third to a half of salt used in food processing was iodized. In Thailand, legislation allows fish, soy sauce and salty brine producers to either use iodized salt or iodize their products directly with potassium iodate. Of these options, direct iodization is preferred because of concerns about organoiodine changes to their products and to avoid the higher cost of iodizing salt. In Viet Nam, where the salt iodization programme was started, fish sauce and other processed food producers object to the requirement to use iodized salt because of fears of adverse organoiodine changes. The use of iodized salt in processed foods and condiments is not limited to iodine status despite very low levels of iodine in household salt. They were found to be consuming 88 (51–110) µg/day of iodine from bouillon cubes which contained 31·8 (26·8–43·7) µg/g. Per capita consumption of bouillon cubes was 2·4 (1·5–3·3) g/day. In Indonesia, iodized salt in instant noodles was found to contain 19%, 12% and 6.5% of iodine recommended nutrient intake in school age children, women of reproductive age and pregnant women respectively, in addition to the 49% and 28% of iodine intake respectively of iodine from processed foods. In other countries, models of the potential intake of iodine from processed foods found that processed foods contribute significantly to iodine intake if they were made with iodized salt. For example, one analysis found that between 10-80% of the daily requirements of the iodine could be provided if iodized salt was used in bread and frequently consumed foods and condiments in Egypt, Indonesia, the Philippines, the Russian Federation and Ukraine based on per capita consumption of these products, salt content of these foods and national level of iodine in iodized salt.

Salt iodization programs. Processed foods now provide the main source of salt intake in many countries. For example, 71, 95 and 71% of sodium is consumed through processed foods in Japan, United Kingdom and the United States respectively. In industrialized countries, processed foods contributing most to salt iodization are often bread and processed meat. In less developed countries, salt-containing condiments are often used in place of table salt and cooking salt and contribute significantly to salt intake, such as soy sauce, fish sauce, fermented fish paste and salty brine. In Southeast Asia or bouillon cubes in Africa. A small survey in Viet Nam in 2010, found that household salt contributed only 6% to total sodium intake. However, the use of soy sauce and soy sauce have been estimated to be consumed by 80% and 90% of the Cambodian population. In Senegal, 95% of women of reproductive age reported consuming bouillon as part of their daily diet, and in China, more than half of salt used in food processing was iodized. In China a 2010 review found that only about one third to a half of salt used in food processing was iodized. In Thailand, legislation allows fish, soy sauce and salty brine producers to either use iodized salt or iodize their products directly with potassium iodate. Of these options, direct iodization is preferred because of concerns about organoiodine changes to their products and to avoid the higher cost of iodizing salt. In Viet Nam, where the salt iodization programme was started, fish sauce and other processed food producers object to the requirement to use iodized salt because of fears of adverse organoiodine changes. The use of iodized salt in processed foods and condiments is not limited to iodine status despite very low levels of iodine in household salt. They were found to be consuming 88 (51–110) µg/day of iodine from bouillon cubes which contained 31·8 (26·8–43·7) µg/g. Per capita consumption of bouillon cubes was 2·4 (1·5–3·3) g/day. In Indonesia, iodized salt in instant noodles was found to contain 19%, 12% and 6.5% of iodine recommended nutrient intake in school age children, women of reproductive age and pregnant women respectively, in addition to the 49% and 28% of iodine intake respectively of iodine from processed foods. In other countries, models of the potential intake of iodine from processed foods found that processed foods contribute significantly to iodine intake if they were made with iodized salt. For example, one analysis found that between 10-80% of the daily requirements of the iodine could be provided if iodized salt was used in bread and frequently consumed foods and condiments in Egypt, Indonesia, the Philippines, the Russian Federation and Ukraine based on per capita consumption of these products, salt content of these foods and national level of iodine in iodized salt.

Salt iodization programs. Processed foods now provide the main source of salt intake in many countries. For example, 71, 95 and 71% of sodium is consumed through processed foods in Japan, United Kingdom and the United States respectively. In industrialized countries, processed foods contributing most to salt iodization are often bread and processed meat. In less developed countries, salt-containing condiments are often used in place of table salt and cooking salt and contribute significantly to salt intake, such as soy sauce, fish sauce, fermented fish paste and salty brine. In Southeast Asia or bouillon cubes in Africa. A small survey in Viet Nam in 2010, found that household salt contributed only 6% to total sodium intake. However, the use of soy sauce and soy sauce have been estimated to be consumed by 80% and 90% of the Cambodian population. In Senegal, 95% of women of reproductive age reported consuming bouillon as part of their daily diet, and in China, more than half of salt used in food processing was iodized. In China a 2010 review found that only about one third to a half of salt used in food processing was iodized. In Thailand, legislation allows fish, soy sauce and salty brine producers to either use iodized salt or iodize their products directly with potassium iodate. Of these options, direct iodization is preferred because of concerns about organoiodine changes to their products and to avoid the higher cost of iodizing salt. In Viet Nam, where the salt iodization programme was started, fish sauce and other processed food producers object to the requirement to use iodized salt because of fears of adverse organoiodine changes. The use of iodized salt in processed foods and condiments is not limited to iodine status despite very low levels of iodine in household salt. They were found to be consuming 88 (51–110) µg/day of iodine from bouillon cubes which contained 31·8 (26·8–43·7) µg/g. Per capita consumption of bouillon cubes was 2·4 (1·5–3·3) g/day. In Indonesia, iodized salt in instant noodles was found to contain 19%, 12% and 6.5% of iodine recommended nutrient intake in school age children, women of reproductive age and pregnant women respectively, in addition to the 49% and 28% of iodine intake respectively of iodine from processed foods. In other countries, models of the potential intake of iodine from processed foods found that processed foods contribute significantly to iodine intake if they were made with iodized salt. For example, one analysis found that between 10-80% of the daily requirements of the iodine could be provided if iodized salt was used in bread and frequently consumed foods and condiments in Egypt, Indonesia, the Philippines, the Russian Federation and Ukraine based on per capita consumption of these products, salt content of these foods and national level of iodine in iodized salt.

Salt iodization programs. Processed foods now provide the main source of salt intake in many countries. For example, 71, 95 and 71% of sodium is consumed through processed foods in Japan, United Kingdom and the United States respectively. In industrialized countries, processed foods contributing most to salt iodization are often bread and processed meat. In less developed countries, salt-containing condiments are often used in place of table salt and cooking salt and contribute significantly to salt intake, such as soy sauce, fish sauce, fermented fish paste and salty brine. In Southeast Asia or bouillon cubes in Africa. A small survey in Viet Nam in 2010, found that household salt contributed only 6% to total sodium intake. However, the use of soy sauce and soy sauce have been estimated to be consumed by 80% and 90% of the Cambodian population. In Senegal, 95% of women of reproductive age reported consuming bouillon as part of their daily diet, and in China, more than half of salt used in food processing was iodized. In China a 2010 review found that only about one third to a half of salt used in food processing was iodized. In Thailand, legislation allows fish, soy sauce and salty brine producers to either use iodized salt or iodize their products directly with potassium iodate. Of these options, direct iodization is preferred because of concerns about organoiodine changes to their products and to avoid the higher cost of iodizing salt. In Viet Nam, where the salt iodization programme was started, fish sauce and other processed food producers object to the requirement to use iodized salt because of fears of adverse organoiodine changes. The use of iodized salt in processed foods and condiments is not limited to iodine status despite very low levels of iodine in household salt. They were found to be consuming 88 (51–110) µg/day of iodine from bouillon cubes which contained 31·8 (26·8–43·7) µg/g. Per capita consumption of bouillon cubes was 2·4 (1·5–3·3) g/day. In Indonesia, iodized salt in instant noodles was found to contain 19%, 12% and 6.5% of iodine recommended nutrient intake in school age children, women of reproductive age and pregnant women respectively, in addition to the 49% and 28% of iodine intake respectively of iodine from processed foods. In other countries, models of the potential intake of iodine from processed foods found that processed foods contribute significantly to iodine intake if they were made with iodized salt. For example, one analysis found that between 10-80% of the daily requirements of the iodine could be provided if iodized salt was used in bread and frequently consumed foods and condiments in Egypt, Indonesia, the Philippines, the Russian Federation and Ukraine based on per capita consumption of these products, salt content of these foods and national level of iodine in iodized salt.