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REVIEW

Dietary Responses to Non-Communicable Chronic Disease Diagnoses—A Scoping Review

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Background: Non-communicable chronic diseases (NCDs) have become a significant health burden, and diet plays a critical role in NCD prevention and management.

Methods: This review systematically synthesizes evidence (up to June 30, 2025) on dietary changes among patients following the diagnoses of NCDs, including cancer, diabetes, chronic inflammatory diseases, hypertension, and other NCDs. A comprehensive literature search based on PubMed, Web of Science, Google Scholar, and ScienceDirect identified 38 studies that met the inclusion criteria.

Results: Among the studies included in this review, those on cancer diagnoses account for the largest proportion (45%), followed by studies on the diagnoses of diabetes and hypertension. The United States has the largest number of studies, primarily on cancer and diabetes diagnoses, followed by China, predominantly on hypertension diagnoses. The remaining studies were conducted sparsely in European and Asia-Pacific countries. While approximately 60% of the studies reported desirable dietary responses following NCD diagnoses, significant heterogeneity across regions and specific types of NCDs were also discovered: (1) cancer-related studies yielded mixed results: most discovered desirable dietary changes, while some observed undesirable adjustments; (2) diabetes patients prioritized reductions in carbohydrates, but recently regression-discontinuity designs have shown little impact of diabetes diagnoses; (3) hypertension patients generally reduced their sodium and alcohol consumption, with responses differ across diagnostic thresholds; (4) chronic inflammatory disease patients tended to avoid symptom-triggering foods; (5) patients with other NCDs (mainly cardiovascular conditions) slightly reduced their alcohol intake.

Conclusion: While existing research has provided considerable evidence on individuals' dietary responses to NCD diagnoses, limitations remain, including uneven geographical and disease coverage, inconsistent dietary assessment methods, insufficient sample representativeness, and inadequate capabilities for causal identification. Future studies should expand geographical and disease coverage, improve diet assessment methods, and strengthen causal design to enhance clinical and public health strategies for NCD management.

Keywords: non-communicable chronic diseases, dietary changes, disease diagnosis, scoping review

Introduction

Non-communicable chronic diseases (NCDs), mainly cardiovascular diseases (eg, heart attacks and stroke), cancers, chronic respiratory diseases (eg, chronic obstructive pulmonary disease and asthma), diabetes, hypertension, and chronic inflammatory diseases (eg, inflammatory bowel diseases), are characterized by their long duration and slow-progressing nature.[1] The past few decades have witnessed the increased prevalence of non-communicable chronic diseases (NCDs) on a global scale. It is estimated that nearly 1.3 billion adults aged 30–79 years globally are hypertensive today,[2] and the number of people over 65 years of age with diabetes will reach 200 million by 2030.[3] Together, NCDs have become a leading cause of mortality and morbidity worldwide (Table 1), imposing a heavy health burden on many countries' healthcare systems. In 2021 alone, NCDs claimed at least 43 million lives worldwide.[1] Against this backdrop, many countries have declared the prevention and management of NCDs a top priority in their healthcare agendas. For instance,

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Table 1 Global Burden of Major Non-Communicable Chronic Diseases

Diseases	Health Burden	Relation to Diet Patterns
Cardiovascular diseases	Accounted for 32% of deaths worldwide;[5] at least 19 million people died from cardiovascular disease in 2021.[1]	A Mediterranean diet rich in extra virgin olive oil or nuts can reduce the risk of cardiovascular diseases.[6]
Cancer	The cause of approximately 9.7 million deaths worldwide in 2022; over 35 million new cancer cases were predicted to occur in 2050.[7]	Fruits, vegetables, fish, whole grains, and olive oil can reduce the risk of many cancers.[8]
Chronic respiratory diseases	The cause of about 4 million deaths in 2021.[1]	A high-quality diet helps reduce the risk of chronic respiratory diseases.[9]
Diabetes	More than 2 million people died from diabetes in 2021; people over 65 years of age with diabetes were expected to reach 195.2 million by 2030 and 276.2 million by 2045.[3]	Whole grains, vegetables, whole fruit, legumes, nuts, seeds, and non-hydrogenated, non-tropical vegetable oils are beneficial for diabetes management.[10]
Hypertension	Affects more than 1 billion adults worldwide and is a leading cause of cardiovascular disease morbidity and mortality.[11]	Limiting salt intake and eating more fruits and vegetables can help control blood pressure.[12]
Chronic inflammatory diseases	Millions of people globally are affected, with the incidence rising in recent years.[13]	High intake of ultra-processed foods can increase the risk of inflammatory bowel disease.[14]

Note: Source: Author's summary.

China's *Medium-to-Long Term Plan for the Prevention and Treatment of Chronic Diseases (2017–2025)* has recently declared the control of chronic diseases as a national strategy, emphasizing multi-sectoral collaboration and the participation of the entire society to reduce the burden of NCDs.[4]

Apart from biological and environmental risk factors, such as genetic endowments and air pollution, diet patterns have also been widely documented as closely linked to the incidence of NCDs. Epidemiological studies have shown that a diet high in fruit and vegetable content is associated with lower incidence rates of many NCDs, such as cancers, chronic respiratory diseases, and diabetes, among older adults, and may even delay the aging process; in contrast, a diet high in red and processed meat shows the opposite effect.[8–10,12,14–16] The Mediterranean diet, which emphasizes plant-based foods and healthy fats, has also been shown to be beneficial for delaying brain aging, improving cognitive function, and preventing cardiovascular disease.[6,16,17]

However, how individuals respond to NCD diagnoses by adjusting their dietary patterns is much less known, at least not in a systematic way. Knowledge about patients' dietary responses to NCD diagnoses is important for two reasons. First, it helps inform post-diagnosis NCD management. If NCD patients do not adjust their diet patterns in a healthier direction, alternative measures may be needed to control disease progression and manage associated risks. Second, how individuals adjust their diets after NCD diagnoses is of interest from a behavioral science perspective. To the extent that their physical health conditions remain similar before and after the diagnosis, the diagnosis serves as an information shock, providing an opportunity to understand how health information should be provided to improve dietary structure.

While previous systematic reviews have examined dietary responses to specific NCDs such as cancer,[18] a comprehensive synthesis across multiple NCDs remains lacking. The present scoping review, based on 38 studies identified from PubMed, Web of Science (WoS), and Google Scholar, aims to systematically summarize findings on dietary responses to NCD diagnoses, identify key patterns across different diseases and regions, derive implications for clinical practice and health policies, and highlight areas that remain to be explored, perhaps with the aid of improved research designs. Our review reveals clear concentrations of studies in given geographical areas (eg, North America and Europe) and on specific disease types (eg, cancers and hypertension). In terms of empirical findings, the diagnosis of NCDs prompts patients to make dietary adjustments, often in a desirable manner; however, these adjustments also show significant heterogeneity across specific diseases, cultural backgrounds, and research methods, underscoring the need for more in-depth investigations to help depict a fuller picture.

Materials and Methods

Literature Search

Study selection was performed following the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews) guidelines.[19] More specifically, a literature search was first conducted using PubMed, Web of Science (WoS), ScienceDirect, and Google Scholar databases for studies published between January 1, 1980, and June 30, 2025. Keywords used in the search included the names of the diseases (ie, "non-communicable chronic diseases," "cardiovascular diseases," "cancer," "chronic respiratory diseases," "diabetes," "hypertension," and "chronic inflammatory diseases"), "disease information," "diagnosed disease," or "disease diagnosis," in combination with "dietary," "dietary intake," "dietary structure," "dietary quality," "dietary diversity" or "nutrient intake." To ensure we included as many relevant studies as possible, we further searched the "Literature Review" and "References" sections of the included papers and conducted reverse searches using Google Scholar and ScienceDirect engines. Appendix 1 provides more details on the literature search databases and search strings.

Inclusion/Exclusion Criteria and Article Screening Process

The preliminary search yielded 1,174 independent published entries (780 from PubMed, 377 from WoS, 5 from ScienceDirect, and 12 from Google Scholar). After excluding 150 duplicates, a meticulous article screening process was then carried out, based on the following criteria. We included both observational studies (based on cross-sectional or longitudinal datasets) and interventional studies in English that reported dietary outcomes or changes following NCD diagnoses in adults; studies focusing solely on pharmacotherapy or non-dietary outcomes were excluded.

The titles and abstracts of all these studies were first read independently by all the authors; 96 studies were retained after excluding those unrelated to diet, such as those focusing on gene therapy and disease diagnostic technologies. The remaining studies were further reviewed by the first three authors of this paper, and only those that examined dietary changes associated with NCD diagnosis were retained. Note that although smoking is usually included in studies of health behavior associated with disease diagnoses,[20–23] we exclude studies focusing solely on smoking, as smoking has no nutritional value; studies reporting smoking outcomes following an NCD diagnosis were kept only if they examined post-diagnosis dietary outcomes as well. Similarly, studies reporting weight changes were included only if they also reported or implied dietary changes (eg, caloric restriction or macronutrient shifts) after an NCD diagnosis. Any disagreements among the three reviewing authors were discussed among all authors until a consensus was reached. Final inclusion/exclusion was determined jointly by all authors. A total of 38 studies were finally included in this review. The flowchart in Figure 1 details the literature search process.

Review Findings

General Patterns

Among the 38 studies included in this review, those on cancer diagnoses account for the largest proportion (17 studies), followed by those on the diagnoses of diabetes (8 studies), hypertension (6 studies), chronic inflammatory diseases (4 studies), and other NCDs (3 studies). Approximately 300,000 participants were involved in these studies. A careful review of these studies reveals several informative patterns. First, existing research efforts were unevenly distributed across regions (Figure 2). The United States has the largest number of studies (11), primarily on cancer (6 studies) and diabetes diagnoses (4 studies), followed by China (6 studies), predominantly on hypertension diagnoses (4 studies). The remaining studies were conducted in the United Kingdom (4 studies), Australia (4 studies), and various European and Asia-Pacific countries (eg, France, Canada, Sweden, Slovenia, and Malaysia). No studies were found in Africa or South America.

Second, there have also been "clusters" of research methods. For example, while cancer diagnosis research has mainly relied on cohort studies that track patients' dietary patterns before and after diagnosis, recent studies on diabetes and hypertension diagnoses have commonly adopted regression discontinuity (RD) designs to infer causality. The research methods for chronic inflammatory diseases and other NCDs are often ad hoc, primarily based on cross-sectional or qualitative analyses.

Finally, while more than half of the reviewed studies discovered some desirable dietary changes in response to NCD diagnoses, the actual patterns differ greatly across specific diseases: (a) Studies on cancer diagnosis exhibited the most inconsistencies. Although most studies have detected some desirable dietary adjustments after the diagnosis, some have reported undesirable changes. For example, a breast cancer study in the US, by Wayne et al (2004), found that many

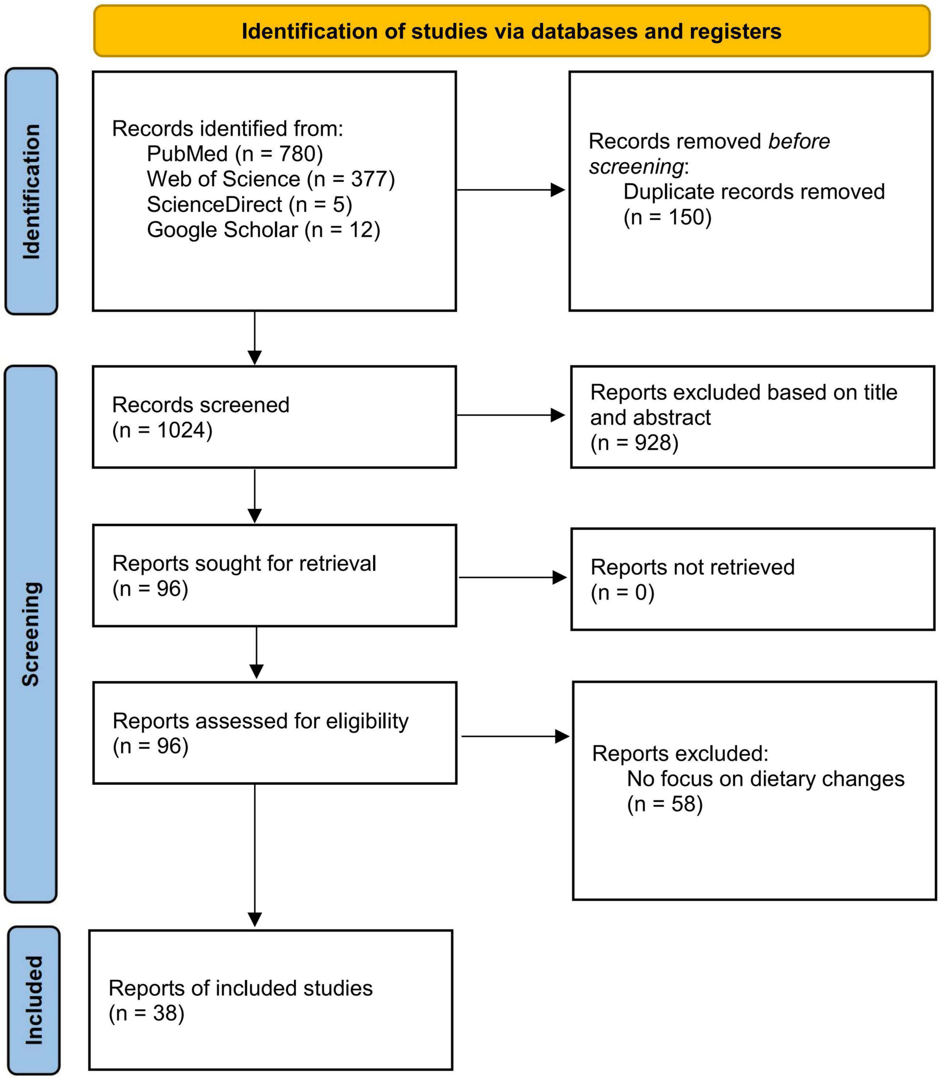

Figure 1 PRISMA flow diagram for literature search and study selection process.

patients increased the percentage of their fat intake after the diagnosis.[24] Another US study on prostate cancer patients, by Avery et al (2013), revealed that 26.5% of the patients increased their consumption of red meat post-diagnosis.[25] (b) Patients diagnosed with diabetes generally reduce their sugar and carbohydrate intake. Yet, recent RD studies, primarily exploiting the glycated hemoglobin (HbA1c) diagnostic threshold, have found no notable impact of diabetes diagnoses on patients' dietary behaviors. (c) In contrast, studies on hypertension diagnoses, which are also mainly based on RD designs, generally found reductions in the patients' fat and alcohol consumption, although the effects differ somewhat across diagnostic criteria (diastolic blood pressure versus systolic blood pressure). (d) Chronic inflammatory disease patients tend to modify their diets based on symptom management, avoiding certain foods (eg, high-fiber or spicy foods) that they believe will exacerbate symptoms, but the evidence thus far remains sparse and methodologically fragmented. (e) Studies on other NCDs (mainly cardiovascular diseases) are relatively scarce, with the only consistent finding being reductions in alcohol consumption among NCD patients.

Below, we will elaborate on the findings of the 38 included studies by specific chronic conditions. Table 2 summarizes key findings of these studies.

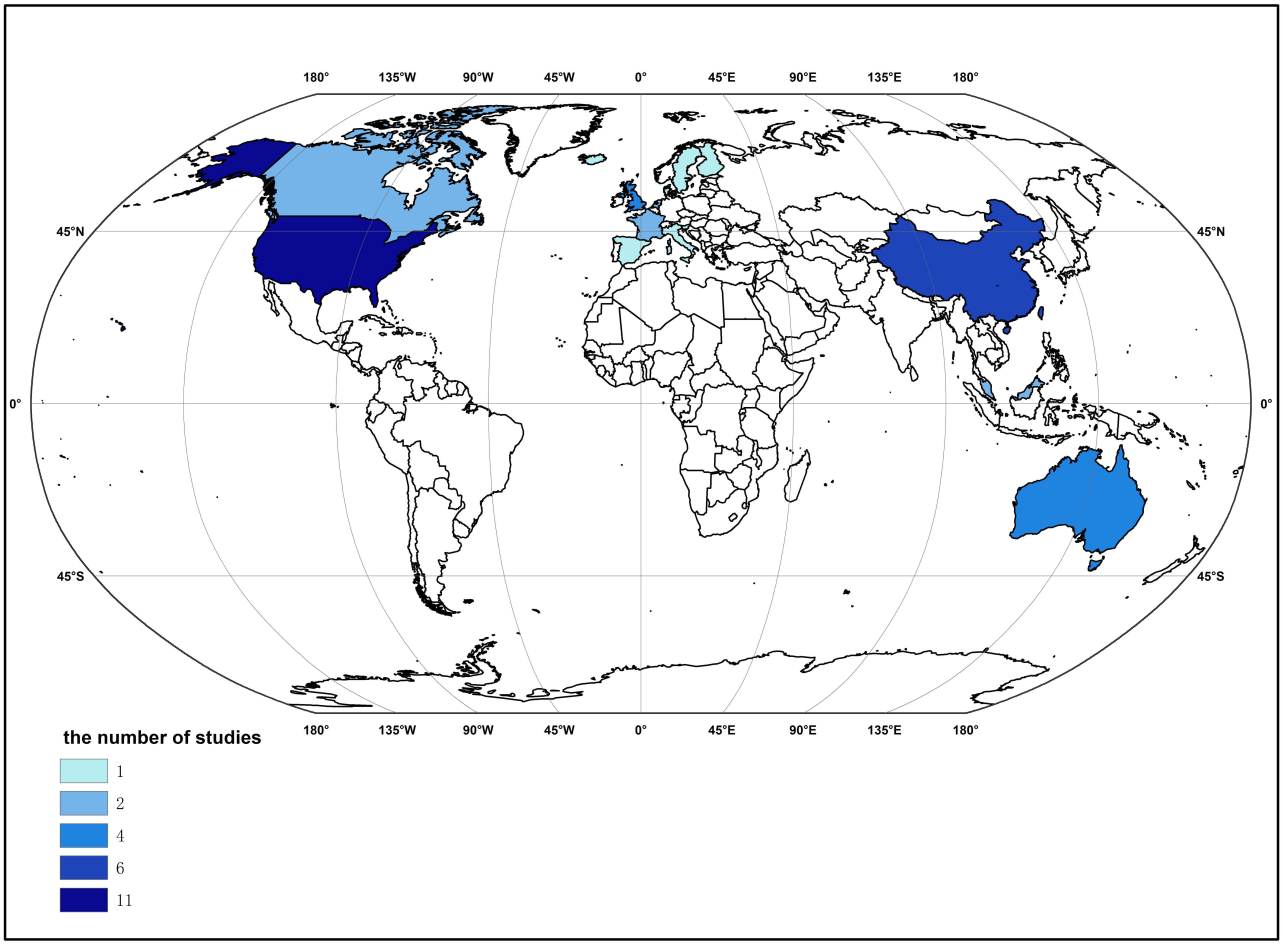

Figure 2 Geographical distribution of studies on dietary responses to non-communicable chronic disease diagnoses.

Dietary Responses to Cancer Diagnoses

Lung, breast, colorectal (colon and rectum), and prostate cancers are the four most common cancers in humans, accounting for 40.9% of all cancer cases globally in 2022.[7] Individuals' dietary changes in response to these cancers (except for lung cancer) have been extensively examined. Most studies adopted a prospective design, following cohorts of individuals and comparing their food and supplement intake before and after the diagnosis; in one case, a control group was included.

Breast cancer. More than half of the 17 available studies on cancer diagnoses focused on (female) breast cancer. Studies in the US, where the majority of the studies were conducted, have yielded mixed findings: both desirable and undesirable dietary changes have been observed. Wayne et al (2004) followed 260 newly diagnosed breast cancer patients in the State of New Mexico. They found statistically significant but small decreases in total energy and macronutrient intake two years post-diagnosis, with younger women reporting greater reductions; the percentage of fat in the patients' diets increased, and there was no notable change in fruit and vegetable intake.[24] Greenlee et al (2014) tracked 2,596 breast cancer patients of Kaiser Permanente, a nonprofit healthcare organization in Northern California. Their records indicate that most patients used at least one vitamin/mineral supplement after the diagnosis; meanwhile, whereas more than half of the patients started taking new supplements—the most common ones being calcium, vitamin D, vitamin B6, and magnesium, nearly half stopped taking supplements—the most common ones being multivitamins, vitamin C, and vitamin E.[31] Sun et al (2018) conducted a prospective cohort study on 2,295 postmenopausal women participating in the Women's Health Initiative, a nationwide program in the US, who were diagnosed with invasive breast cancer. The results show that for most participants, diet quality (measured by the Healthy Eating Index)[68] remained

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Table 2 Summary of the Dietary Responses to NCD Diagnoses (n = 38)

Author[s] DOI	**Disease Type**	**Country/ Region**	**Sample Size**	**Study Design [Adjustment Factors]**	**Dietary Assessment Method**	**Follow-Up Period**	**Dietary Changes**
A. Cancer							
(1) Lunar et al (2021)[26] 10.2478/sjph-2021-0010	Breast cancer	Slovenia	102 [female (100%); age: <50 (65.7%); >50 (34.3%)]	Cross-sectional study [N/A]	An online self-reported questionnaire	N/A	Desirable changes (unit: % of patients): increased intake of vegetables (73.5%), fruits (62.7%), fish (35.3%), nuts (38.2%) and vegetable oil (37.3%); decreased intake of sugar (66.7%), sweets (61.8%), red meat (60.8%), pork (59.8%), fried food (53.9%), fast food (52.0%), and ice cream (50.0%).
(2) Shi et al (2020)[27] 10.1007/s10549-019-05457-9	Breast cancer	U.S.	2,865 [female (100%); age: 26–94; mean = 61]	Prospective cohort study [age, race, menopausal status, baseline BMI, tumor stage, number of positive nodes, receipt of surgery, chemotherapy, hormonal therapy, and radiation therapy]	A 139-item modified version of the Block 2005 FFQ.	24 mo post-diagnosis	(1) Desirable changes: fruits/vegetables increased by 0.2–0.5 servings/d; 21% of survivors temporarily reduced alcohol intake from 1.4–3.0 drinks/d to 0.1–0.5 drinks/d at 6 mo. (2) No significant changes: dietary fat.
(3) Tollosa et al (2020)[28] 10.1007/s10549-020-05704-4	Breast cancer	Australia	4,931 [female (100%); age: mean = 52.44, SD = 1.46]	Prospective cohort study [age, marital status, occupation, number of comorbidities, area of residence, and residence states]	A validated semi-quantitative FFQ.	15 y post-diagnosis	(1) Desirable changes: non-starchy vegetable intake increased from 89.1 g/d (pre-diagnosis) to 137 g/d at 6–9 years post-diagnosis [95% CI = (104.8, 170.6)], and to 120.8 g/d at 9–12 years post-diagnosis [95% CI = (85.2, 154.4)]; fruit intake (≥ 2 servings/d) increased by 9% 3–6 y post-diagnosis [95% CI = (1.22, 5.71)]. (2) No significant changes: whole vegetables; milk; nutrients.
(4) Sun et al (2018)[29] 10.1016/j.jand.2018.03.017	Breast cancer	U.S.	2,295 [female (100%); age: 50–79]	Prospective cohort study [age, race, education, income, medication use, smoking status, and alcohol intake]	A self-administered FFQ.	12 y	(1) Desirable changes (unit: cup equivalents/1000 kcal): increased intake of total fruit (0.1), whole fruit (0.08), total vegetables (0.03), greens and beans (0.01), dairy products (0.03), and total protein foods (0.1); Desirable changes (unit: oz equivalents/1000 kcal): increased intake of seafood and plant proteins (0.1); decreased intake of refined grains (0.2) and sodium (0.1). (2) Undesirable changes: whole grains decreased by 0.03 oz equivalents/1000 kcal.
(5) Lei et al (2018)[30] 10.2147/CMAR.S168562	Breast cancer	China	1,112 [female (100%); age: mean = 52.2, SD = 8.8]	Prospective cohort study [energy]	A validated and interviewer-administered FFQ with 12-mo recall.	T_0: 0–12 mo post-diagnosis (recalled pre-diagnosis diet); T_1: 18 mo post-diagnosis; T_2: 36 mo post-diagnosis	(1) Desirable changes ($T_0 \rightarrow T_1 \rightarrow T_2$; unit: servings/1000kcal/d): whole grain (0.10→0.25→0.18); eggs (0.17→0.20→0.22); vegetables (2.14→2.98→3.24); potatoes (0.06→0.12→0.14); fruits (0.61→0.90→0.94); nuts (0.05→0.10→0.14); red meat (0.57→0.44→0.40); processed meat (0.06→0.01→0.02); salted food (0.06→0→0). (2) Undesirable changes ($T_0 \rightarrow T_1 \rightarrow T_2$; unit: servings/1000kcal/d): refined grain (1.77→2.03→1.91); poultry (0.27→0.01→0.04); fish and seafood (0.54→0.49→0.49); dairy products (0.50→0.13→0.16).

(6) Greenlee et al (2014)[31] 10.1186/1471-2407-14-382	Breast cancer	U.S.	2,596 [female (100%); age: <50 (18.5%); 50–59 (26.7%); 60–69 (31.9%); 70+ (23%)]	Prospective cohort study [age, race, education, household income, family history of breast cancer, stage at diagnosis, number of positive lymph nodes, hormone receptor positivity, HER2/neu status, surgery type, treatment received, BMI, fruit and vegetable intake, physical activity, and smoking status]	Diet information: a modified version of the Block 2005 FFQ. Information on multivitamins and single formulations taken: asked during interviews.	6 mo post-diagnosis	(1) Desirable changes (unit: % of patients): initiated intake: calcium supplements (38.2%); vitamin D (32.01%); magnesium supplements (11.31%); Desirable changes (unit: mg/d unless otherwise noted): increased intake of vitamin D (609.09 IU/d), magnesium (57.69), calcium (119.70), niacin (B3) (94.52), and thiamin (B1) (57.14). (2) Undesirable changes: 17.14% of patients discontinued multivitamin supplements; beta-carotene decreased by 4166.67 IU/d. (3) Changes with unclear clinical implications (unit: % of patients, unless otherwise noted): initiated vitamin B6 supplements (12.3%); discontinued vitamin C supplements (15.97%); discontinued vitamin E supplements (45.62%); decreased intake of vitamin B6 (16.14 mg/d), vitamin C (26.07 mg/d), iron (73.85mg/d), vitamin B12 (126.84 mcg/d), folic acid (folate) (42.47 mcg/d), vitamin E (41.32 IU/d), and vitamin A (3425.60 IU/d).
(7) Yaw et al (2014)[32] 10.7314/APJCP.2014.15.1.39	Breast cancer	Peninsular Malaysia	368 [female (100%); age: mean = 53.57; SD = 9.04]	Cross-sectional study [N/A]	A food item questionnaire covering 8 food domains.	Mean: 4.86 ± 3.46 y post-diagnosis	(1) Desirable changes (unit: % of patients): increased intake of fish (42.7%), fruits and vegetables (62.8%), whole grains (28.5%), high-fat foods (18.8–65.5%), added-fat foods (28.3–48.9%), red meat (39.7%), pork (20.1%), and high-sugar foods (42.1–60.9%). (2) Undesirable changes (unit: % of patients): decreased intake of poultry (51.1%), eggs (40.5%), and low-fat foods (10.6–18.8%).
(8) Shaharudin et al (2013)[33] 10.1097/NCC.0b013e31824062d1	Breast cancer	Malaysia	116 [female (100%); age: 22–70; mean = 50.56, SD = 9.66]	Cross-sectional study [age, education, marital status, employment status, household income, clinical characteristics (cancer clinical treatment and diagnosis stage)]	A semi-quantitative FFQ, 3-d dietary recalls, and a dietary changes questionnaire.	2 y post-diagnosis	(1) Desirable changes (unit: % of patients, unless otherwise noted): increased intake of fruits (50.0%) and low-fat/skim milk (32.8%); decreased red meat and offal (34.5–48.2%), sweetened condensed and evaporated milk (32.8%); increased intake of β-carotene (1492 μg/d), saturated fatty acids (4.2 g/d), total energy (164 kcal/d), and total fat (11.3 g/d). (2) Undesirable changes (unit: % of patients, unless otherwise noted): decreased intake of poultry (26.8–37.9%), cereal/cereal-based products (11.2–38.8%), seafood/seafood products (10.3–39.6%), and protein (8.6 g/d). (3) Changes with unclear clinical implications: increased vitamin C intake (40.3 mg/d); decreased intake of vitamin E (0.9 mg/d), monounsaturated fatty acids (4 g/d), and polyunsaturated fatty acids (2 g/d). (4) No significant changes: carbohydrate intake.

(*Continued*)

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Table 2 (Continued).

Author[s] DOI	Disease Type	Country/ Region	Sample Size	Study Design [Adjustment Factors]	Dietary Assessment Method	Follow-Up Period	Dietary Changes
(9) Velentzis et al (2011)[34] 10.1007/s10549-010-1238-8	Breast cancer	U.K.	1,560 [female (100%); age: <50 (33.8%); 50–59 (32.8%); 60–69 (27.7%); 70+ (6.0%)]	Prospective cohort study [energy intake]	A validated self-administered FFQ.	About 1 y post-diagnosis	(1) Desirable changes (unit: servings/1000 kcal/d, unless otherwise noted): increased intake of fruits (0.46), vegetables (0.48), legumes (0.06), soy meat (0.003), whole grains (0.04), fruit/veg/pure juice (1.03), oily fish/fish roe (0.04), white fish/shellfish (0.04), nuts (0.03), and milk (6 mL/d); decreased intake of red meat (0.01) processed meat (0.01), refined grains (0.06), chips (0.01), pizza (0.002), full-fat dairy (0.05), butter (0.05), chocolate (0.03), desserts (0.12), coffee (0.09), wine (0.02), other alcohol (0.009), high energy drinks (0.009), and alcohol (0.68 g/d). (2) Changes with unclear clinical implications (unit: servings/1000 kcal/d): increased intake of cold breakfast cereal (0.03), potatoes (0.01), and tea (0.06). (3) No significant changes: low-fat dairy products; eggs; processed fat; beer.
(10) Wayne et al (2004)[24] 10.1016/j.jada.2004.07.028	Breast cancer	U.S.	260 [female (100%); age: mean = 57.5; <50 (26.1%); 50–59 (33.5%); 60–69 (22.3%); 70+ (18.1%)]	Prospective cohort study [age, ethnicity, education, BMI, stage of disease, exercise change, tamoxifen use, and chemotherapy]	A Women's Health Initiative FFQ.	About 2 y	(1) Desirable changes: total energy decreased by 137 kcal/d; fat decreased by 3.6 g/d. (2) Undesirable changes: fat as a percentage of energy increased by 1.0%; protein decreased by 3.1 g/d. (3) Changes with unclear clinical implications: carbohydrates decreased by 21.1 g/d. (4) No significant changes: fruit and vegetable intake.
(11) Bours et al (2015)[35] 10.1017/S0007114515001798	Colorectal cancer	Netherlands	1,458 [male (57%); age: mean = 70.2, SD = 9; <65 (28%); ≥65 (72%)]	Cross-sectional study (current dietary regimen, dietary advice received, excess weight, adherence to the Dutch physical activity guideline, current smoking, current alcohol use, age, sex, socio-economic status, comorbidities, tumour stage, tumour site, time since diagnosis, chemotherapy, and presence of a stoma]	A self-administered questionnaire.	Mean: 6.9 y post-diagnosis	Desirable changes (unit: % of patients): increased intake of fish (88%), vegetables (95%), fruits (92%), fibers and whole grains (91%), and water (89%); decreased intake of fat (97%), meat (94%), sugar (96%); alcohol (95%), and salt (97%).
(12) Holmes et al (2010)[36] 10.1158/1055-9965.EPI-09-1097	Colorectal cancer	US, Canada, Australia	1,092 [female (52.7); age: <60 (61.3%); ≥60 (38.7%)]	Prospective cohort study [age, sex, and site]	A lifestyle and risk factor questionnaire; a detailed FFQ at baseline (subset).	About 5 y post-diagnosis	Folic acid-containing supplements utilization rate increased by 19.7%.

(13) Larsen et al (2007)[37] 10.1016/j. cgh.2006.12.011	Colorectal cancer	Denmark	7,060 [female (50.3%); age: 50–55]	Randomized controlled trial [gender, month of questionnaire completion, possible change in chronic disease status, and the baseline value of each specific lifestyle variable]	A self-administered 10-min questionnaire based on validated national health surveys.	3 y	(1) Desirable changes in screening group (unit: servings/d): decreased intake of meat other than poultry [0.02, 95% CI = (−0.04, 0.00)], and chocolate [0.08, 95% CI = (−0.11, −0.05)]; increased intake of poultry [0.09, 95% CI = (0.06, 0.11)], and fatty fish [0.02, 95% CI = (−0.01, 0.05)]. (2) Undesirable changes in screening group (unit: servings/d): decreased intake of fruit/berries/vegetables (excluding potatoes) [0.13, 95% CI = (−0.18, −0.08)]. (3) Desirable changes in control group (unit: servings/d): decreased intake of meat other than poultry [0.02, 95% CI = (−0.05, 0.00)], and chocolate [0.10, 95% CI = (−0.13, −0.07)]; increased intake of poultry [0.08, 95% CI = (0.05, 0.10)], fatty fish [0.09, 95% CI = (0.06, 0.11)], and fruit/berries/vegetables (excluding potatoes) [0.04, 95% CI = (−0.01, 0.09)]. (4) Changes with unclear clinical implications (unit: servings/ d): decreased intake of boiled potatoes in the screening group [0.22, 95% CI = (−0.24, −0.19)], and in the control group [0.16, 95% CI = (−0.19, −0.13)].
(14) Avery et al (2013)[25] 10.1007/s10552-013-0189-x	Prostate cancer	U.K.	678 [female (0%); age: 50–69]	Prospective cohort study [N/A]	A validated 114-item FFQ.	1 y post-diagnosis	(1) Desirable changes (unit: g/d; % of patients): increased intake of fresh tomatoes (5.2; 34.7%), tomato products (11.4; 23.5%), fruit/vegetable juice (19.6; 28.6%), protein (1.5; 40.0%); vegetables (43.2; 23.1%) ($p < 0.10$); decreased intake of red meat (24.3; 19.0%). (2) Undesirable changes (unit: g/d; % of patients): decreased intake of fresh tomatoes (13.8; 9.9%), tomato products (13.9; 17.6%), fruit/vegetable juice (44.1; 8.2%), protein (18.4; 13.4%), and vegetables (64.7; 18.3%); increased intake of red meat (8.6; 26.5%) ($p < 0.10$). (3) No significant changes: total energy; carbohydrate; dairy; calcium; vitamin E; selenium; pulses; alcohol; fruit; oily fish.
(15) Wiygul et al (2005)[38] 10.1016/j. urology.2005.01.035	Prostate cancer	U.S.	805 [female (0%); age: ≤65 (47%); >65 (53%)]	Cross-sectional survey [N/A]	A 6-page survey composed of validated items.	Median: 40 mo post-diagnosis	(1) Desirable changes: increased the utilization rate of multivitamins (18%) and calcium supplements (11%). (2) Changes with unclear clinical implications: increased the utilization rate of Vitamin E (5%), Vitamin C (9%).
(16) Tan et al (2021)[39] 10.1007/s00520-021-06276-9	Cancer (mainly breast, colorectal, and hematological)	Australia	520 [female (68%); age: 18–90; mean = 57]	Prospective cohort study [N/A]	A non-validated food questionnaire, a 3-d food diary, and a 7-day alcohol-intake diary.	Mean 18.3 mo post-diagnosis	Desirable changes (unit: % of patients): increased intake of vegetables (36%), fruits (20%); decreased intake of red meat (25%), sugar/sweets (20.1%), fat/fried food (12%), and alcohol (11%).
(17) Fassier et al (2017)[40] 10.1002/ijc.30704	Cancer	France	696 [female (66.1%); age: mean = 59.0; SD = 10.6]	Prospective cohort study [daily energy intake]	24-h dietary records.	49 ± 12.6 mo	(1) Desirable changes (unit: g/d): decreased intake of sweetened soft drinks (77.85), alcoholic drinks (92.93), and meat/offal (35.47). (2) Undesirable changes (unit: g/d): decreased intake of vegetables (102.36), dairy products (93.87), and soy products (85.82); increased intake of broths (42.08).

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Table 2 (Continued).

Author[s] DOI	Disease Type	Country/ Region	Sample Size	Study Design [Adjustment Factors]	Dietary Assessment Method	Follow-Up Period	Dietary Changes
B. Diabetes							
(18) Alalouf et al (2024)[41] 10.1086/724415	Type 2 diabetes	U.S.	16,916 [female (55%); age: mean = 44]	Regression discontinuity design [N/A]	Self-reported attempts to improve weight, alcohol use, and fast food consumption.	Short-term: ≤1 y; long-term: 1–6 y.	No significant changes: alcohol and fast food.
(19) Thomas and Mentzakis (2024)[42] 10.1002/hec.4803	Type 2 diabetes	U.K.	45,063 [female (54%); age: mean = 51, SD = 17.54]	Regression discontinuity design [year FEs]	Self-reported fruit and vegetable consumption, and alcohol use.	N/A (cross-sectional)	No significant changes: fruit, vegetable, and alcohol.
(20) Gaggero et al (2022)[43] 10.1016/j.socscimed.2022.115420	Type 2 diabetes	Spain	13,971 [female (52%); age: mean = 65, SD = 12.62]	Regression discontinuity design [age, age squared, gender, employment status, time elapsed from the T2DM, pre-existing health conditions, as well as time, area, and general practitioners FEs]	Clinical records and patients' interviews by physicians.	Short-term: ≤1 y; long-term: 1–3 y.	No significant changes in alcohol consumption; Significant BMI reduction, suggesting possible dietary improvements.
(21) Hinkle et al (2021)[44] 10.1016/j.jand.2021.04.014	Gestational diabetes mellitus	U.S.	1,371 [female (100%); age: mean = 27.7; SD = 5.6]	Prospective cohort study [age, race and ethnicity, BMI, education, nulliparity, marital status, insurance status, study site, year, gestational week at gestational diabetes mellitus diagnostic testing, season, weekend or weekday status of the recall]	24-h dietary recalls.	Gestational wk 16 to 41	(1) Desirable changes: decreased intake of total energy [184 kcal/d, 95% CI = (−358, −10)], carbohydrate [47.6 g/d, 95% CI = (−71.4, −23.7)], juice [0.4 cups/d, 95% CI = (−0.7, −0.2)], and added sugar [3.2 teaspoons/d, 95% CI = (−5.5, −0.5)]. (2) Undesirable changes: increased intake of artificially sweetened beverages [0.2 cups/d, 95% CI = (0.0, −0.3)], and cheese [0.3 cups/d, 95% CI = (−0.1, −0.6)].
(22) Oster (2018)[45] 10.1257/app.20160232	Type 2 diabetes	U.S.	4,684 households [household heads; age: mean = 59.5; SD = 12.1]	Event study + Random Forest regression approach [year-month FEs, household FEs]	Calories and expenditure shares by food group based on consumer purchases and nutrient information.	12 mo pre-diagnosis to 18 mo post-diagnosis	(1) Desirable changes: increased intake of nuts, nut butters, and seeds; decreased intake of sugars, sweets, candies, non-whole grains, soft drinks, soda, all potato products, frozen/fridge entrees, whole milk products, and fruit juices. (2) No significant changes: whole-grain products, low fat/skim milk products, whole fruits, eggs, coffee, tea, other vegetables, dark-green vegetables, orange vegetables, all cheese, fish, fish products, bacon, sausage, lunch meats, fats, condiments, red meat, chicken, turkey, game birds, soups, canned, dry beans and peas.
(23) Kim et al (2018)[46] 10.1080/14,737,167.2018.1468257	Diabetes	U.S.	3,538 [female (52%); age: mean = 63.71; SD = 12.70]	Cross-sectional with propensity-score matching [age, age squared, gender, race, marital status, education, poverty status, glycosylated hemoglobin level, total cholesterol level, hypertension diagnosis, number of doctor visits, usual source of care]	24-h dietary recalls.	1 y retro-spective	(1) Desirable changes (unit: g/d): decreased intake of sugar [14.9, 95% CI = (−21.0, −8.9)], and carbohydrate [11.6, 95% CI = (−21.5, −1.7)]. (2) No significant change: protein.
(24) Mancini et al (2017)[47] 10.1016/j.nutres.2017.05.005	Type 2 diabetes	France	57,304 [female (100%); age: mean = 52.5; SD = 6.4]	Prospective cohort study [BMI, physical activity, smoking status at baseline, history of chronic disease before the first FFQ]	FFQ (conversion of foods into nutrients using a French food composition table).	12 y	(1) Desirable changes (unit: g/d, unless otherwise noted): decreased intake of carbohydrate (9.29), alcohol (2.01), lipids (79), and energy (74.70 kcal/d). (2) No significant changes: protein; fiber.

(25) Olofsson et al (2017)[48] 10.1017/S0007114516002257	Type 2 diabetes	Sweden	23,953 [female (0%); age: 45–79; mean = 58]	Prospective cohort study [age, education, BMI, smoking status, physical activity, alcohol consumption, cardiovascular disease, and cancer]	FFQ.	12 y	(1) Desirable changes in T2D group (unit: servings/wk): increased intake of total fruits and vegetables [1.6, 95% CI = (1,08, 2.03)], root and cruciferous vegetables [0.92, 95% CI = (0.68, 1.15)]; decreased intake of juice [0.6, 95% CI = (−0.71, −0.39)]. (2) Desirable changes in non-T2D group (unit: servings/wk): increased intake of total fruits and vegetables [0.7, 95% CI = (0.54, 0.84)], root and cruciferous vegetables [0.35, 95% CI = (0.28, 0.42)]. (2) Undesirable changes in non-T2D group (unit: servings/wk): increased intake of juice [0.1, 95% CI = (0.05, 0.15)].
C. Hypertension							
(26) Chen et al (2025)[49] 10.1057/s41599-025-04962-1	Hypertension	China	9,355 [female (53%); age: mean = 46.79; SD = 14.32]	Regression discontinuity design [N/A]	3-d 24-h dietary recalls.	2–4 y	(1) SBP hypertensive group (SBP ≥ 140 mmHg): desirable changes (unit: g/d, unless otherwise noted): decreased intake of fat (12.855), livestock products (47.968); decreased the incidence of consumption of livestock products (14.1%). Undesirable changes (unit: g/d, unless otherwise noted): increased intake of wheat (52.079); decreased intake of fruit (17.316); decreased the consumption incidence of rice (7.8%), other grains (9.2%), light-colored vegetables (3.7%), soybean products (6.8%). (2) DBP hypertensive group (DBP ≥ 90 mmHg): no significant changes.
(27) Huang et al (2024)[50] 10.1017/jwe.2023.38	Hypertension	China	10,787 [individual-wave observation; female (15.8%); age: mean = 44.49; SD = 13.79]	Regression discontinuity design [N/A]	Self-reported drinking behaviors and alcohol consumption.	2–4 y	(1) DBP hypertensive group (DBP ≥ 90 mmHg): desirable changes (unit: mL/wk, unless otherwise noted): decreased beer consumption (518.6), Chinese spirits (194.8), excessive drinking incidence (17.9%), and drinking frequency (1.2 times/wk); Undesirable changes: wine consumption increased by 81.5 mL/wk (urban adults under 60). (2) SBP hypertensive group (SBP ≥ 140 mmHg): no significant changes in alcohol consumption.
(28) Dai et al (2022)[51] 10.1002/hec.4466	Hypertension	China	33,676 [individual-wave observation; female (52%); age: mean = 46.40; SD = 45.46]	Regression discontinuity design [N/A]	3-d 24-h dietary recalls.	2–4 y	(1) SBP hypertensive group (SBP ≥140 mmHg): desirable changes: fat intake decreased by 7.92 g/d. (2) DBP hypertensive group (DBP ≥ 90 mmHg): no significant changes in fat intake.

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Table 2 (Continued).

Author[s] DOI	Disease Type	Country/ Region	Sample Size	Study Design [Adjustment Factors]	Dietary Assessment Method	Follow-Up Period	Dietary Changes
(29) Slade and Kim (2014)[52] 10.1080/ 08964289.2013.826171	Hypertension	U.S.	4,587 [female (44.5%); age: mean = 51; SD =16]	Cross-sectional study [age, age squared, gender, race, education, marital status, income, US birth status, an interview period dummy, and diagnoses of heart disease, diabetes, and stroke]	24-h dietary recalls.	Diagnosis time groups: 0–2 y, 3–5 y, 6–10 y, 11–20 y, ≥21 y	(1) Desirable changes among newly diagnosed patients (0–2 y): decreased intake of sodium (286 mg/d), total fat (7 g/d), energy (134 kcal/d), and saturated fat (2 g/d). (2) Undesirable changes among newly diagnosed patients (0–2 y): decreased intake of protein (7 g/d). (3) Desirable changes in the long-term post-diagnosis (>10 y): the probability of added salt use decreased by 35–48%. (4) No significant changes: carbohydrate, sugar, cholesterol, and alcohol.
(30) Zhao et al (2013)[53] 10.1016/j. jhealeco.2012.11.007	Hypertension	China	13,252 [individual-wave observation; female (52%); age: mean = 45.40; SD = 14.50)	Regression discontinuity design [N/A]	3-d 24-h dietary recalls.	2–4 y	(1) Desirable changes (unit: g/d): decreased fat intake (7.7); fat intake in the richest third group (10.2). (2) No significant changes: protein, carbohydrates, energy.
(31) Neutel and Campbell (2008)[54] 10.1016/S0828-282X(08) 70,584-1	Hypertension	Canada	1,281 [female (58.6%); age: <60 (65.5%)]	Longitudinal cohort study [N/A]	Self-reported BMI and excessive alcohol use.	1994–2002 (5 surveys, every 2 y)	(1) Desirable changes (in lifestyle): the proportion with smoking cessation increased by 18.2%. (2) Undesirable changes: the proportion overweight increased by 3.3% and obese by 11.5%. (3) No significant changes: excessive alcohol use.
D. Inflammatory bowel disease							
(32) Weiss et al (2023)[55] 10.1108/BFJ-03-2022-0262	Multiple sclerosis	Australia	11 [female (82%); age: 31–70; mean = 47, SD = 13]	Qualitative secondary analysis [N/A]	Individual in-depth interviews.	Mean 8 mo post-diagnosis (retro-spective)	Desirable changes: increased intake of fruits, vegetables, unsaturated fats (such as fish and flaxseed oil); decreased intake of saturated fats (avoided red meat and dairy), alcohol, and refined sugars.
(33) Guida et al (2021)[56] 10.3390/nu13030759	Inflammatory bowel disease	Italy	167 [female (42.5%); age: 18–77; mean = 48.6; SD = 16]	Cross-sectional study [N/A]	A semi-structured questionnaire consisting of 48 questions.	n/a	(1) Desirable changes (unit: % of patients): avoided intake of spicy foods (49.1%), seasoned foods (38.3%), carbonated drinks (29.9%), fried foods (28.7%), alcoholic beverages (18.6%), energy drinks (7.2%), pork meat (6.6%), and processed meat (6.6%). (2) Undesirable changes (unit: % of patients): avoided intake of milk and dairy products (34.1%), vegetables (28.1%), legumes (19.2%), fruits (16.2%), whole grain bread (13.2%), eggs (2.4%), fish (0.6%), and chicken (0.6%). (3) Uncertain clinical significance (unit: % of patients): avoided intake of coffee (12.6%), refined sugars (9%), bread (4.8%), rice (1.8%), and pasta (1.2%).

(34) Opstelten et al (2019)[57] 10.1016/j.clnu.2018.06.983	Inflammatory bowel disease	Netherlands	1,634 [patients: 165, female (54%), age: median = 50, IQR: 40–57; controls: 1469, female (49%); age: mean = 55, IQR: 45–62]	Cross-sectional + longitudinal cohort study [age, BMI, smoking status, plus gender and energy intake]	A self-completed, semi-quantitative FFQ.	Median 29 mo (IQR 20–48 mo)	(1) Desirable changes (unit: g/d): increased intake of meat/poultry/fish [16.4, 95% CI = (9.76, 23.0)]; decreased intake of fat [3.53, 95% CI = (−5.57, −1.50)], and alcohol [2.38, 95% CI = (−4.26, −0.50)]. (2) Undesirable changes (unit: g/d): increased intake of carbonated beverages [0.78, 95% CI = (0.33, 1.24)], sugar and sweets (0.36, 95% CI = (0.16, 0.56)]; decreased intake of dietary fiber [2.19, 95% CI = (−3.05, −1.32)], dairy products [32.8, 95% CI = (−62.1, −3.51)], fruits/vegetables [0.58, 95% CI = (−0.72, −0.45)], and grains [0.10, 95% CI = (−0.30, 0.11)]. (3) Uncertain clinical significance (unit: g/d): increased intake of protein [2.76, 95% CI = (1.07, 4.46)], and carbohydrate [10.1, 95% CI = (5.23, 14.9)].
(35) Vidarsdottir et al (2015)[58] 10.1186/s12937-016-0178-5	Inflammatory bowel disease	Iceland	78 [female (55.1%); age: 18–74; mean = 40, SD = 12.7]	Cross-sectional study [N/A]	A questionnaire containing 65 questions and a 3-d food record.	N/A	(1) Desirable changes (unit: % of patients): restricted intake of processed meat (55%), soft drinks (46%), alcohol (45%), fast food (44%), and spicy food (41%). (2) Undesirable changes (unit: % of patients): restricted intake of dairy products (60%) and meat (26%). (3) Uncertain clinical significance (unit: % of patients): restricted intake of citrus fruits (41%), cabbage (26%), and coffee/tea (36%).
E. Other NCDs							
(36) Ding et al (2022)[59] 10.1136/jech-2021-217237	Cardiovascular diseases (angina, myocardial infarction, or stroke)	U.K.	12,502 [female (23.9%); age: mean = 65.39; SD = 9.33]	Longitudinal case-control study [age, sex, ethnicity, marital status, Socioeconomic position, smoking, physical activity, frequency of fruit and vegetable intake, prevalent hypertension, BMI, and self-rated health]	Self-reported number of alcoholic drinks consumed in the week prior to interview.	30 y pre-diagnosis to 30 y post-diagnosis	(1) Desirable changes in male patients: alcohol intake dropped from 87 g/wk [95% CI = (54, 120)] to 74 g/wk [95% CI = (45, 102)] after diagnosis, slightly rose to 78 g/wk [95% CI = (40, 116)] at the subsequent 3.5 years, and then gradually decreased to 31 g/wk [95% CI = (2, 61)] at 30 years after diagnosis; (2) Desirable changes in female patients: alcohol intake slightly dropped to 25 g/wk [95% CI = (20, 30)] after diagnosis, then continued to decrease.
(37) Koikkalainen et al (2002)[60] 10.1016/S0738-3991(01)00149-5	Myocardial infarction	Finland	50 (all male; age: mean = 48.4; SD = 6.1)	Prospective cohort study [N/A]	A questionnaire with 46 items at the baseline and a 4-d food diary.	3–4 mo post-diagnosis	Desirable changes (unit: % of patients): decreased intake of high-fat foods (76%) and alcohol (58%); avoided fast food/hamburgers (68%) and sweets/cakes (62%).
(38) Hu et al (2022)[61] 10.1136/bmjopen-2022-062920	Multiple NCDs (Hypertension, diabetes, myocardial infarction, stroke)	China	5,724 [female (52%); age: mean = 67.75, SD = 9.31]	Longitudinal panel data [Chamberlain-Mundlak CRE Tobit model) [gender, age, age squared, ethnicity, years of education, household income, marital status, health insurance, region, height, smoking status, other drinkers in household]	3-d 24-h dietary recalls.	2000–2015 (about 15 y: 6 waves)	Desirable changes (unit: oz/wk, unless otherwise noted): decreased intake of beer [1.49, 95% CI = (−2.85, −0.13)], red wine [0.93, 95% CI = (−1.63, −0.23)], Chinese spirits [0.89, 95% CI = (−1.23, −0.54)], total alcohol (0.95); decreased the incidence of excessive drinking [24%, 95% CI = (−0.35, −0.14)].

Notes: This table summarizes key findings from the 38 studies included in this scoping review on dietary responses to NCD diagnoses.Studies are grouped by disease type, with entries within each category listed in reverse-chronological order by publication year.Numerical values (eg, absolute values, change values, percentages) and units are reported as presented in the original studies.Reported dietary changes are classified as "desirable", "undesirable", or "changes with unclear clinical implications" based on alignment with internationally recognized dietary guidelines for NCD management, including cancer,[62,63] diabetes,[64] hypertension,[65] chronic inflammatory diseases,[66] and cardiovascular diseases.[67] Unless otherwise noted, the dietary changes reported were statistically significant in the original study ($p < 0.05$).

Abbreviations: y, year(s); mo, month(s); wk, week(s); d, day(s); min, minute(s); CI, confidence interval; IQR, interquartile range; SD, standard deviation; Fes, Fixed Effects; NCD, non-communicable chronic disease; FFQ, Food Frequency Questionnaire; N/A, not applicable/not available.

relatively stable post-diagnosis: 9% experienced a decline, whereas 19% experienced an improvement; these changes in diet quality were influenced by age and education levels.[29] More recently, Shi et al (2020) focused on 2,865 breast cancer survivors within Kaiser Permanente, an integrated managed care consortium headquartered in Northern California, over 24 months post-diagnosis. They reported that the patients' overall intake of fruits and vegetables increased slightly after the diagnosis, their alcohol intake decreased temporarily, and their dietary fat intake did not change significantly; notably, nearly half of the survivors consumed insufficient fruits and vegetables and excessive dietary fat.[27]

Studies in Europe and the Asia-Pacific region have more consistently found positive dietary changes. Velentzis et al (2011) tracked 1,560 UK patients. Their before-and-after comparisons revealed statistically significant increases in the patients' post-diagnostic intake of fruits, vegetables, whole grains, and lean protein source, as well as significant decreases in their consumption of high-fat, high-sugar products, red meat, coffee, alcoholic drinks, and refined grains; accompanying adjustments in supplement and vitamin intakes were also discovered.[34] Lunar et al (2021) followed 102 breast cancer patients in Slovenia and found that the majority of them changed their eating habits after the diagnosis: they commonly increased their intake of fruits and vegetables and reduced their intake of sugar, red meat, pork, fried foods, fast food, and ice cream; a large proportion of them took dietary supplements post-diagnosis.[26]

Shaharudin et al (2013) examined changes in dietary intake in 116 breast cancer patients in Malaysia two years post-diagnosis. The patients reduced their consumption of red meat, seafood, noodles, and poultry and increased their intake of fruits, vegetables, low-fat milk, and soy products.[33] Yaw et al (2014) assessed dietary changes of 368 breast cancer patients recruited from Peninsular Malaysia, from one year before the diagnosis to the study period. The results show that most patients reduced their intake of foods with high and added fat, red meat, pork, poultry, and high-sugar foods, while increasing their intake of fish, fruits, vegetables, and whole grains; their intake of other food groups remained roughly the same.[32] Lei et al (2018) followed 1,112 Chinese women with early-stage breast cancer and discovered that their intake of vegetables, fruits, whole grains, refined grains, eggs, and nuts significantly increased 18 and 36 months post-diagnosis; in contrast, their consumption of red meat, processed meat, poultry, dairy products, soy foods, sugar drinks, and coffee decreased significantly.[30]

Methodologically worth noting, the only study conducted in Australia incorporated a control group and employed a difference-in-differences (DID) design.[28] The authors selected 153 breast cancer survivors and 4,778 women without cancer from the Australian Women's Health Longitudinal Study and investigated changes in health behavior of the survivors within 15 years post-diagnosis. Before the diagnosis, the survivors' dietary patterns were similar to those of cancer-free women; however, the survivors significantly increased their fruit intake 3–6 years post-diagnosis and their non-starchy vegetable intake 6–12 years post-diagnosis.[28] Unfortunately, these positive dietary improvements were not sustained over a longer time period (12–15 years post-diagnosis), and there was no significant change in overall vegetable intake.[28]

Colorectal cancer. The dietary changes following a colorectal cancer diagnosis are, in general, favorable. Holmes et al (2010) examined the use of folic acid supplements after colon cancer diagnoses among 1,092 patients recruited from the Colon Cancer Family Registry, an international study conducted in the US, Canada, and Australia. Their analysis revealed that the proportion of individuals who used folic acid supplements after a colorectal cancer diagnosis increased significantly. This change was associated with factors such as gender, race, region, and pre-diagnosis diet: females, Caucasians, US residents, non-smokers, and those who ate less meat and more fruits and vegetables were more likely to take folic acid supplements.[36] Bours et al (2015) followed 1,458 colorectal cancer survivors in the Netherlands and found that after the diagnosis, the majority of patients reduced their intake of fat, meat, sugar, alcohol, and salt, while increasing their intake of fish, vegetables, fruits, fiber, whole grains, and water; more than half began taking dietary supplements.[35]

Unlike the two studies above, Larsen et al (2007) conducted a randomized trial in Denmark to examine the effects of both colorectal cancer diagnosis and cancer screening.[37] The trial randomly assigned 13,961 individuals aged 50–55 living in Telemark (with a mixed rural and urban population) and Oslo (with an urban population) into a flexible sigmoidoscopy screening group and a control group. The screening outcome (negative versus positive neoplasia results at screening) was found to be a significant predictor of changes in body weight: screen-negative subjects gained, on average, 0.5 kg more than screen-positive subjects, with no changes in any other lifestyle dimensions. However, when comparing lifestyle changes between the entire screening group and the control group, the former group showed some undesirable patterns in their eating habits. They reduced their intake of fruits, berries, and vegetables—in fact, they did not successfully give up smoking as the control group did, suggesting an undesirable post-screening lifestyle pattern in general. As the authors noted, there might be a "health certificate effect" (presumably attached to screen-negative subjects) associated with colorectal cancer screening.[37]

Prostate cancer. Wiygul et al (2005) surveyed 805 men diagnosed with prostate cancer in the US (at the Duke University Medical Center) from 1997 to 2002. They detected a significant post-diagnosis increase in the use of most supplements, with multivitamins, vitamin E, vitamin C, and calcium being the most common.[38] Avery et al (2013) conducted a prospective cohort study involving 678 men with localized prostate cancer from the UK and found a number of desirable dietary changes. For instance, more than one-third of the patients increased their intake of fresh tomatoes, while 9.9% reduced it. Similar heterogeneity in diet responses was also observed for the intake of tomato products, fruit and vegetable juices, and protein. Yet, potentially worrisome, while 19.0% of the patients reduced their intake of red meat (−24.3 g/d), as commonly recommended for prostate cancer management, more patients (26.5%) increased their red meat consumption (+8.6 g/d).[25]

Other cancers. The remaining studies did not examine individuals' dietary responses to specific cancers; instead, they viewed different cancers as a group. The findings are, again, mixed. Fassier et al (2017) followed 696 French patients with incidentally diagnosed cancer (ie, any self-declared cancer diagnosis) between 2009 and 2016 and observed a statistically significant decrease in intakes of vegetables, dairy products, meat, soy products, sweetened soft drinks, and alcoholic beverages and an increase in broths and fats/sauces from before to after the diagnosis.[40] Tan et al (2021) surveyed 520 cancer survivors attending the Sydney Cancer Survivors Centre clinic in Australia, discovering that 55% of them changed their diet after cancer diagnosis. The most common changes were reductions in intake (or avoidance) of red meat, sugar/sweets, and fat, and increases in fruit and vegetable intake; however, only 20% and 40% of patients met the recommended daily intake levels for fruits and vegetables, respectively.[39]

In summary, while most studies on cancer diagnosis conducted over the past two decades have reported some positive changes in dietary and supplement intake after the diagnosis, these changes were often relatively small and may not be clinically meaningful, as noted by an earlier survey.[18] Meanwhile, some less favorable trends were also discovered, especially in US studies and in studies on breast cancer diagnoses.

Dietary Responses to Diabetes Diagnoses

As a severe NCD, diabetes has become increasingly more prevalent globally. As of 2021, more than 500 million people worldwide suffered from diabetes, and the prevalence rate of diabetes among individuals aged 20–79 exceeded 10%.[69] Our literature search has identified eight studies that examined the dietary changes in response to a diabetes diagnosis. Compared with cancer-diagnosis studies, studies on diabetes diagnoses adopted a more diverse battery of empirical methods. Besides before-and-after comparisons, methods such as propensity score matching (PSM), DID, and machine learning have been employed. Additionally, as more researchers have recognized that diabetes diagnoses often involve continuous biomarkers (eg, hemoglobin levels) and medically set diagnosis thresholds, RD designs have been widely adopted in recent studies.

As in cancer-diagnosis research, the majority of diabetes-diagnosis studies came from the US Kim et al (2018) analyzed 1,769 pairs of US individuals matched by PSM and found that compared with matched controls without diabetes/prediabetes, those diagnosed with diabetes/prediabetes consumed less sugar and carbohydrates.[46] Hinkle et al (2021) tracked 1,371 pregnant US women receiving usual prenatal care and compared their nutrition intake before and after a diagnosis of gestational diabetes mellitus (GDM), using women without GDM as a control group. This DID-type analysis revealed significant reductions in total energy and carbohydrate intake among women with GDM from before to after diagnosis. They also decreased their intake of juice and added sugar while increasing their consumption of cheese and artificially sweetened beverages. In contrast, these dietary changes were not observed in the control group.[44] Oster (2018) did not follow diabetes patients directly. Instead, she used household scanner data to estimate US households' food consumption in response to a diabetes diagnosis, inferred from purchases of diabetes-related products based on a machine learning approach. Her estimates reveal statistically significant but relatively small calorie reductions, which are concentrated in unhealthy foods, due to a diabetes diagnosis.[45]

Two large-scale studies came from Europe. Olofsson et al (2017) conducted a prospective cohort study involving 23,953 Swedish men and found that after a type-2 diabetes diagnosis, the patients increased their total consumption of fruits and vegetables while reducing their consumption of orange and grapefruit juices.[48] Mancini et al (2017) further examined the role socio-economic factors play in moderating dietary changes post-diabetes diagnosis. They tracked 57,304 French women who were free from type-2 diabetes in 1993 and followed them through 2005. They found that type-2 diabetes diagnoses were associated with reductions in energy, carbohydrate, lipid, and alcohol intakes among the participants; education, and whether having a family (a partner and/or children) also contributed to their dietary changes.[47]

More recent studies exploited the fact that diabetes diagnoses are based on continuous biomarkers (eg, glycated hemoglobin [HbA1c]) and their corresponding diagnostic thresholds (eg, HbA1c = 6.5%) to estimate the impact of diabetes diagnoses on dietary responses using RD-type designs.[41–43] In general, these RD studies revealed minimal impact of diabetes diagnoses on dietary changes.

Gaggero et al (2022) adopted a fuzzy-RD approach to analyze longitudinal administrative data from 13,971 individuals in Spain with at least one HbA1c measurement per year between 2004 and 2010. They found no significant effect on patients' alcohol consumption or smoking behavior.[43] Alalouf et al (2024) used both sharp and fuzzy RD designs to analyze claims data covering 16,916 individuals from a large US national insurance company (Optum). They also found little effect of diabetes diagnosis on individuals' dietary behavior, measured by the daily frequency of high-fat food intake.[41] Thomas and Mentzakis (2024) applied a fuzzy regression kink design on blood sample data taken from 45,063 British individuals participating in the Health Survey for England. Again, they found no significant effect of diabetes diagnosis on patients' fruit or vegetable consumption, measured on the day before the survey.[42]

Nevertheless, it should be noted that although existing RD studies found no significant impact of diabetes diagnosis on dietary behavior, some of these studies found a significant diabetes-diagnosis impact on body weight, which presumably results from dietary changes. For example, Gaggero et al (2022) found that a diabetes diagnosis significantly reduced patients' BMI in both the short term and the long term, providing indirect evidence of effective dietary adjustments in response to a diabetes diagnosis.[43]

Dietary Response to Hypertension Diagnoses

Hypertension is a leading preventable risk factor of death, affecting over 1.5 billion people globally and causing more than 10 million deaths annually in the recent decade.[70,71] Our literature research identified six studies on dietary adjustments in response to hypertension diagnoses. Earlier studies employed conventional observational methods such as before-and-after comparisons and cross-sectional comparisons. As in the case of diabetes diagnosis studies, the recent decade has witnessed a growing popularity of RD designs in hypertension-diagnosis studies.

Earlier studies, mainly conducted in North America, employed longitudinal data to examine dietary changes following a hypertension diagnosis. Neutel and Campbell (2008) used data from the longitudinal National Population Health Survey of Canada to investigate lifestyle changes of 1,281 individuals newly diagnosed with hypertension, and how the use of antihypertensive medication moderates these changes. They found limited healthy changes after the diagnosis; the only notable change was a reduction (18.6%) in the relative risk of smoking.[54] Worse still, an increased number of newly diagnosed patients became obese: weight gain was prominent among antihypertensive medication users, predominantly female beta-blocker users. Slade and Kim (2014) drew data from the US National Health and Nutrition Examination Survey. They divided the patient sample into five groups based on time since diagnosis (0–2 years, 3–5 years, 6–10 years, 11–20 years, and ≥21 years) and analyzed the dynamic patterns of dietary adjustments among 4,587 individuals diagnosed with hypertension. The findings reveal different responses to hypertension diagnosis depending on the timing of the diagnosis: those with a recent diagnosis were more likely to reduce their intake of nutrients critical to blood pressure management (eg, sodium), but this effect diminished over time.[52]

Similar to diabetes diagnosis, hypertension diagnosis is also based on continuous biomarkers (ie, diastolic blood pressure [DBP] and systolic blood pressure [SBP]) and their corresponding diagnostic thresholds (ie, 90 mmHg for DBP and 140 mmHg for SBP). Recognizing this feature, recent studies have employed RD designs to examine the impact of hypertension diagnoses on dietary changes.

The following four RD studies were all based on data from the China Health and Nutrition Survey (CHNS), a large-scale longitudinal household survey covering 12 provincial administrative units in China. The earliest study, by Zhao et al (2013), applied a sharp RD design (around the 140-mmHg SBP cutoff) to analyze data on 13,252 Chinese individuals. They found a significant reduction in fat intake among high-income individuals, with no notable changes in the intakes of other macronutrients (ie, carbohydrates and protein) and total energy.[53]

The three more recent studies all adopted a two-dimensional RD design (around both the 140-mmHg SBP and the 90-mmHg DBP cutoff). Dai et al (2022) examined the lifestyles of 33,676 Chinese individuals, with fat intake representing the dietary-behavior dimension. They found that SBP-based hypertension diagnosis significantly reduced individuals' fat intake, while DBP-based diagnosis had essentially no effect.[51] Huang et al (2024) analyzed the impact of first-ever hypertension diagnoses on Chinese adults' alcohol consumption behavior, based on a sample of 10,787 CHNS participants. Their analysis suggested that first-ever DBP-based hypertension diagnoses significantly reduced the frequency of alcohol consumption, the incidence of excessive alcohol consumption, and the intake of beer and Chinese spirits among Chinese adults; the SBP-based diagnosis had no significant effect on their drinking behavior.[50]

Most recently, Chen et al (2025) further investigated the impact of hypertension diagnoses on the entire diet structure of 9,355 Chinese individuals.[49] Consistent with the findings of Zhao et al (2013)[53] and Dai et al (2022),[51] SBP-based hypertension diagnoses were found to lower patients' fat intake; the diagnoses also reduced their consumption of livestock products; DBP-based diagnoses had little impact on dietary outcomes.[49] Some undesirable impacts were also found. In particular, SBP-based diagnoses undermined patients' dietary diversity and balance by decreasing their intake of foods that ought to increase for hypertensive individuals, such as fruits.[49]

Dietary Response to Chronic Inflammatory Disease Diagnoses

Chronic inflammatory diseases can lead to lifelong debilitation, loss of tissue function, and organ failure, affecting millions of people and showing an increasing trend in prevalence rates.[13] Compared with studies on the above-discussed NCDs, studies on the effect of chronic inflammatory disease diagnosis are far sparser, and the methods adopted are often ad hoc. Our literature search identified four studies, conducted in four different countries, on dietary changes associated with diagnoses of chronic inflammatory diseases. Most of these studies were based on relatively small samples.

In Iceland, Vidarsdottir et al (2015) interviewed 78 patients diagnosed with inflammatory bowel diseases (IBDs) (Crohn's disease and ulcerative colitis). Most of these patients adopted dietary changes after the diagnosis, commonly avoiding dairy products, processed meats, soft drinks, alcohol, fast food, spicy foods, citrus fruits, cabbage, meat, coffee, or tea, and increasing their intake of fish, non-processed foods, chicken, and nutritional drinks.[58]

In a Dutch population-based study, Opstelten et al (2019) compared dietary patterns between 165 patients with longstanding IBDs and a control group comprising 1,469 participants. Cross-sectional comparisons revealed that IBD patients had higher intakes of animal protein and carbohydrates and lower intakes of alcohol, dietary fiber, and unsaturated fat than the control group. These differences can be explained by the former's higher consumption of carbonated beverages, meat, and poultry, and lower consumption of fruit, vegetables, and dairy products (except cheese).[57]

In southern Italy, Guida et al (2021) administered a semi-structured questionnaire to 167 consecutively recruited patients with IBDs. The survey revealed that while most IBD patients did not consider food as a cause of IBDs, over 80% of them changed their diet after the diagnosis. They generally avoided spicy, seasoned, and fried foods, milk and dairy products, carbonated drinks, spirits, vegetables, legumes, and whole-grain bread, and most reported an improvement in symptoms.[56]

In Australia, Weiss et al (2023) conducted semi-structured online interviews with 11 patients diagnosed with multiple sclerosis to understand how they made food choices following the diagnosis. Four post-diagnostic themes emerged from the interview data: (i) moving in the direction of the dietary guidelines, (ii) modifying intake of dietary fat, (iii) requiring mental effort, and (iv) needing input from a dietitian; how patients interpret healthy eating advice played a key role in forming different themes.[55]

Dietary Response to Diagnoses of Other NCDs

The rest of the studies (three in total) reviewed in this article did not fall into any of the categories above. Koikkalainen et al (2002) interviewed 50 Finnish male patients participating in an inpatient cardiac rehabilitation program. They discovered that after being diagnosed with myocardial infarction, 96% of patients changed their eating habits, 76% consumed foods with lower fat content, and more than 60% avoided fast food, hamburgers, candy, and cakes.[60] Ding et al (2022) conducted a matched case-control study on the 30-year alcohol consumption trajectory among 2,501 patients with cardiovascular disease and 10,001 non-patients based on two large-scale cohort studies in the UK (Whitehall II and EPIC-Norfolk). They found little difference in alcohol consumption between patients and non-patients, and a slight decrease in alcohol consumption in cardiovascular disease patients before and after diagnosis.[59] Hu et al (2022) examined data on 5,724 individuals aged 50 and above from the CHNS to analyze the influence of NCD diagnoses on their alcohol consumption behavior. Their regression analysis (based on a Chamberlain-Mundlak correlated Random Effects Tobit model) suggested that diagnoses of NCDs (stroke, myocardial infarction, diabetes, and hypertension) reduced older adults' alcohol consumption in China.[61]

Discussion

Summary and Interpretation of Findings

Our review of the 38 included studies on individuals' dietary responses to NCD diagnoses reveals several key findings. First, there have been uneven distributions across study areas and specific chronic conditions. The most widely examined NCDs are cancers (particularly breast cancer and colorectal cancer), followed by diabetes and hypertension; research on chronic inflammatory diseases and other NCDs remains relatively scarce. Meanwhile, nearly half of the studies were conducted in the US, primarily focusing on cancer and diabetes diagnoses; another notable cluster consists of studies on hypertension diagnoses (6 studies), all from China.

These uneven distributions suggest a mismatch between medical research resources and regional disease burden. For example, while the burden of NCDs is also substantial in Latin America,[72–74] none of the studies identified in our literature search came from that region. The uneven distributions of research may also reflect clinical characteristics and research feasibility of different chronic conditions. For example, cancer patients often undergo hospitalization and long-term follow-up, which makes their dietary behaviors easier to observe for medical research. In contrast, hypertensive individuals usually do not need hospitalization and inpatient treatments; follow-up data are often not available for hypertension patients. Owing to the launch of the CHNS, a large-scale longitudinal household survey in China, studies on the impact of hypertension diagnoses on dietary behaviors became feasible. This fact highlights the necessity of implementing household surveys on population health (rather than relying solely on hospital records) to create opportunities to study individuals' dietary adjustments in response to NCD diagnoses.

Second, regarding post-diagnosis dietary changes, although most studies indicate that patients tend to adopt at least some healthier dietary behaviors, undesirable dietary changes were also identified. The increases in fat intake among breast cancer patients[24] and red meat intake among prostate cancer patients in the U.S.[25] are worrisome and call for more in-depth analysis of their root causes. These differences suggest potential disparities in patients' interpretations of health information embedded in NCD diagnoses. Understandably, while a hypertension diagnosis likely serves as a wake-up call for healthy lifestyles, a cancer diagnosis could be so devastating that it renders dietary issues of secondary priority. The "health certificate" effect found among individuals with negative colorectal cancer screening results in Denmark,[37] similar to the "false security" effect observed among individuals who received negative blood cholesterol test results in Canada,[75] may also complicate these interpretations. The interpretations may also be influenced by factors such as cultural background, socio-economic level, and access to health education resources, as suggested in the study by Mancini et al (2017).[47]

Finally, the findings seem to be method-dependent. Take studies on diabetes diagnosis, for example. Conventional observational methods tend to yield larger impacts of diabetes diagnosis than recent studies based on RD designs.[41–43,51] This inconsistency may be due to the fact that RD designs capture only the local effects around the diagnostic threshold, thereby limiting their generalizability to the overall patient population.[76,77] Moreover, among studies of hypertension diagnosis, the findings differ systematically across diagnostic thresholds, indicating that different diagnostic criteria may lead to differential responses by influencing patients' risk perception, an issue that merits scrutiny in future research. Nevertheless, the incorporation of new methods, such as the application of RD designs in recent diabetes and hypertension studies,[41–43,49–51,53] represents a trend toward methodological breakthroughs in medical research.[76,77]

Remaining Gaps and Suggestions for Future Research

Although past research has provided considerable evidence on individuals' dietary responses to NCD diagnoses, important gaps remain. First, there has been a notable imbalance in research coverage. The vast majority of existing studies have been conducted in countries with relatively well-developed healthcare systems (eg, the US and Western European countries). Similar research has been lacking in low- and middle-income areas with severe chronic diseases, such as Latin America and Southeast Asia.[72–74,78] Given the differences in disease environments, cultural backgrounds, economic development levels, and the quality of health systems across regions, future studies focusing on under-studied areas are likely to be fruitful.

Second, there seems to be a "disease preference" among existing studies, favoring certain types of cancer, diabetes, and hypertension, with insufficient attention paid to other NCDs such as gastritis. Such an imbalance in disease coverage may be due to the nature of NCD treatment protocols and the feasibility of research. Yet, as new research methodologies (eg, online interviews and RD designs) have become available, more studies should be done to examine the dietary effects of diagnoses of understudied NCDs.

Third, dietary assessment methods have not been consistent across studies (Figure 3). Fewer than half of the reviewed studies adopted standard food frequency questionnaires (FFQs) or food diaries. Many existing studies rely on self-

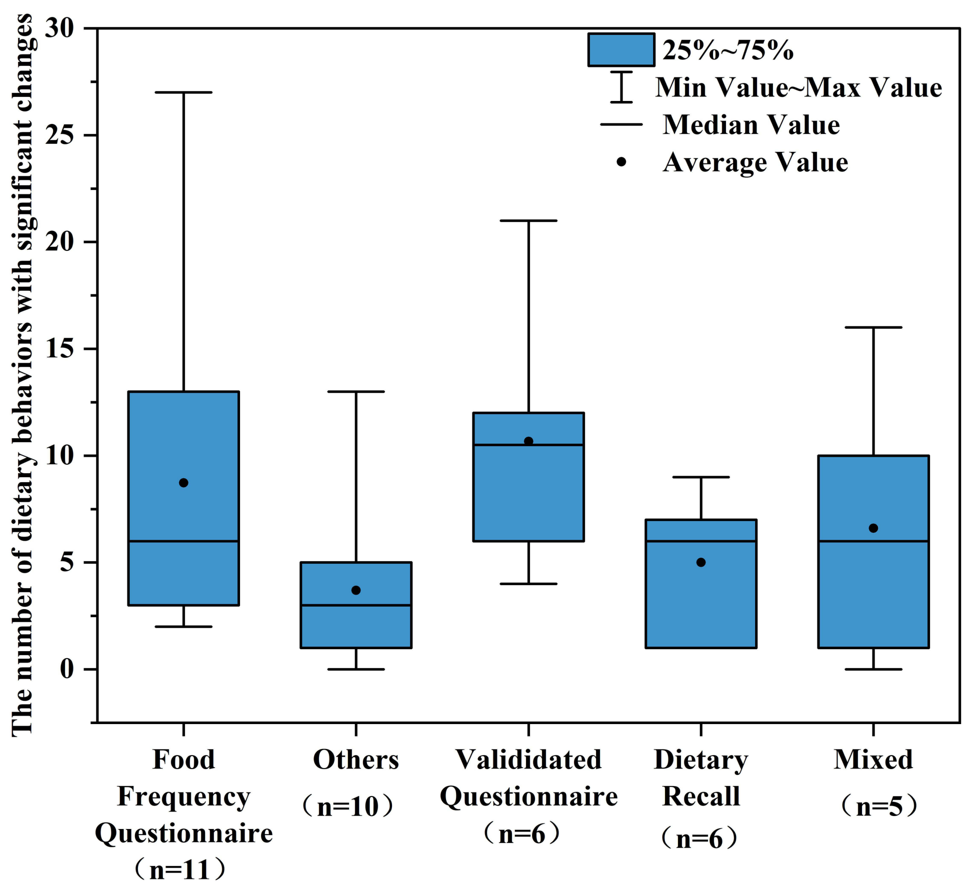

Figure 3 Relationship between dietary assessment method and the number of dietary changes detected.

Notes: Dietary assessment methods are categorized into five groups: (1) Food Frequency Questionnaire: standard or modified FFQs; (2) Validated questionnaires: structured or semi-structured questionnaires other than FFQs, such as online self-reported questionnaires, self-administered questionnaires, and semi-structured questionnaires; (3) Dietary recalls: methods based on recall of food intake over a specified period (eg, 24-hour or 3-day recalls); (4) Others: methods based on self-reported dietary information, in-depth interviews, validated multi-item surveys, and other non-standardized tools; (5) Mixed: studies that employed more than one dietary assessment method (eg, combining semi-quantitative FFQ, dietary recalls, and dietary change questionnaires).

reported food-intake data, which may be contaminated by recall bias; objective and real-time dietary monitoring data are largely lacking, which may have undermined this review's ability to identify informative patterns. Future research should aim to standardize and objectify dietary assessment methods while enhancing the accuracy, reliability, and comparability of dietary data. In fact, as Figure 3 suggests, studies based on standardized FFQs or other validated questionnaires tend to detect more significant post-diagnosis dietary changes than studies using other, less standardized methods.

Fourth, issues related to sample representativeness and selection bias are prominent. Most studies were based on voluntary participant samples or clinical samples.[24–27,29–36,38–40,44,45,56–58] Since patients with lower health awareness or those who had given up health management post-diagnosis were often excluded from the study, the resulting sample may not be representative of the original underlying population. Such a non-random sample selection problem may have biased the findings of some studies. Moreover, some studies were based on relatively small samples.[55,58,60] Even if the analysis yielded unbiased findings, these findings may have limited external validity. To enhance generalizability, future studies should adopt more representative sampling strategies to ensure that the research results are generalizable to broader patient populations.

Fifth, causal identification remains a challenge. Most existing studies have employed cohort studies or cross-sectional designs, which only reveal the association between NCD diagnosis and dietary changes but fail to rule out the influence of confounding factors (eg, income, health endowment, and health awareness), making it difficult to establish a causal relationship between NCD diagnoses and dietary changes. Although the recent decade has witnessed increased popularity of RD-type designs in studies of NCD diagnoses, a built-in limitation of RD designs is their focus restricted to "the sample near the diagnostic threshold," which makes it difficult to generalize RD findings to the population far from the threshold. Therefore, future research should enhance causal inference through innovative designs and explore differences in effects under different disease severities to improve external validity.

Sixth, there has been a lack of assessment of clinical significance. Most existing studies have merely focused on the direction and magnitude of changes in food intake. However, they have failed to evaluate whether the adjusted intake levels meet the thresholds recommended by internationally recognized guidelines or those recommended for specific disease clinical management. Future studies should enhance the assessment of clinical and public health significance by comparing dietary changes with established guidelines.

Finally, explorations of comorbidity are largely nonexistent. Most existing studies have focused on a single disease, overlooking the common comorbid situations among patients with NCDs. For example, hypertension is commonly observed among diabetes patients.[79] The presence of multiple chronic conditions may lead to conflicts among different dietary recommendations, undermining the effectiveness of the disease management strategy. Thus, future studies examining the dietary behavior responses of patients with comorbidities are expected to be fruitful.

Conclusion

The scoping review presented above summarizes current research regarding patients' dietary responses to NCD diagnoses. The results indicated that although patients with different NCDs made dietary adjustments based on their diagnoses, these changes varied significantly among different disease types, cultural backgrounds, and research methods, and the clinical significance remains unclear.

To achieve more clinically and public health-relevant conclusions, actions should be taken in the following directions. First, funding agencies should encourage and support research on chronic diseases in low- and middle-income countries with a high burden of these diseases, while expanding research to understudied NCDs. In particular, nationally representative dietary surveys in these countries should be invested in. Second, public health systems should promote the use of standardized and objective dietary assessment tools to enhance data quality and the effectiveness of policy evaluation. Meanwhile, researchers should adopt more rigorous causal inference designs in their studies and ensure that the samples cover a wider range of populations. Finally, healthcare systems should develop standardized nutritional guidelines tailored to disease types and cultural backgrounds. Timely post-diagnosis dietitian referrals can be made. Structured dietary follow-up programs can also be integrated into NCD management. These actions will enable the provision of more precise and feasible health support strategies for patients, helping to alleviate the burden of NCDs on the global health system.

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