JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

To Study Dietary Pattern, Approach, and multi prospected

Dr.Priyanka devi

Abstract

Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients in diets, and the frequency with which they are habitually consumed. Dietary patterns examine the combinations, types, and amounts of foods consumed in the diet. There is now global consensus that food and nutrition policies should be informed by evidence regarding dietary patterns. Dietary patterns are assessed using two main approaches, namely, data-driven approaches based on multivariate statistical techniques (e.g., principal component analysis, cluster analysis, and reduced rank regression) or investigator-defined patterns commonly based on "a priori" dietary guidelines or recommendations (e.g., diet quality scores). Dietary pattern methods can be used to address a range of nutrition science issues including etiological research using observational and experimental designs, behavioral research, monitoring, and surveillance and in dietary guideline development. Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients in diets, and the frequency with which they are habitually consumed. Many social, demographic, and individual factors can have influence dietary patterns. A variety of food choices may benefit or harm health over time. Inappropriate dietary patterns are associated with risk of negative consequences in terms of diet-related chronic diseases, like cardiovascular disease, obesity, type 2 diabetes, and/or cancer. Dietary restriction behaviors can result in eating disorders including anorexia nervosa, bulimia nervosa, and binge eating disorder. Diet patterns are usually fairly well established, but they can change. Understanding of human nutrition can help to create eating patterns that help to achieve and maintain a healthy weight, reduce the risk of developing chronic diseases, and promote good health.

Keywords: Diet quality index; Dietary patterns; Healthy Eating Index; Investigator defined methods; Principal component analysis; Total diet, dietary assessment food choices diet quality

Introduction

Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients in diets, and the frequency with which they are habitually consumed. Despite large developments in the field of dietary patterns, key research gaps remain such as a lack of primary studies for some health outcomes and populations, an understanding of the role of dietary patterns in diets gene interactions and individual responses to diet, and methodological issues that impact the synthesis of evidence for use in the development of dietary guidelines. Diet may influence the cancer process through several mechanisms. High intake of fruits and vegetables may reduce the risk of cancers of the aero digestive tract, and dietary fiber and dairy products may protect against colorectal cancer. Red and processed meat increase the risk of colorectal cancer. Diets rich in high-calorie foods, such as fatty and sugary foods and drinks, promote obesity and consequently cancer risk. Alcoholic drinks cause several cancers. A healthy dietary pattern for cancer prevention includes: a high intake of vegetables, fruits, legumes, whole grains, lean meats/seafood, a low-fat dairy and moderate in alcohol; low in red and/or processed meats, saturated fat, and sodas/sweets and salt.

Dietary intake is a complex exposure, with multiple layers reflecting a continuum from nutrients to foods to eating occasions to dietary patterns .Each of these layers, and the interplay between them, is important to health and provides a unique perspective to our understanding of contemporary nutrition problems. Definitions of dietary patterns have evolved over time, and there are a number of different definitions of Early research used a variety of terms and definitions, with Slattery et al.7 using the term "eating patterns" to describe statistically derived patterns from food consumption data. This approach is useful in some contexts, for example, when conducting systematic reviews and meta-analyses as it can provide clear inclusion and exclusion criteria. However, it important to remember that conceptually, the study of dietary patterns aims to capture the multidimensional and complex nature of diet, assessing the total diet rather than intakes of individual nutrients or foods, and restricting the definition to the methodological approaches used may limit the emergence of new approaches and techniques to capture dietary patterns.

B. CURRENT STATUS OF FIELD:- Dietary patterns have emerged as an important exposure in nutritional epidemiology. This interest has increased alongside the lack of success of dietary intervention studies focused on single nutrients such as those examining b-carotene and the development of interventions based on the "total diet" such as the Lyon Diet Heart Study and the Dietary Approaches to Stop Hypertension (DASH) trial. Additional evidence of the inadequacies of a single-nutrient approach is provided by meta-analyses of the role of saturated fat and cardiovascular disease which demonstrated inconsistencies in the existing literature when examining nutrient-focused research. There are a number of advantages of using dietary patterns to reflect dietary exposure rather than individual nutrients or even individual foods. Biologically, dietary pattern research has the potential to capture

B. Assessing Dietary Patterns:- A number of key methodologies have emerged over time in the dietary pattern literature These are grouped into two major types: (1) data-driven methods (also referred to as empirical methods or "a posteriori" methods) and (2) investigator-defined methods (also referred to as "a priori" methods). Each of these methods provides a composite or summary measure of dietary behaviors; however, it is important to recognize that each of these methods addresses the issue from a different perspective and the particular method of choice will depend on the research question.

C. Comparability of Dietary Patterns:- A significant issue facing dietary pattern research is comparability across studies using different methods and in different populations groups. Some of the reasons for this arise from use of different methodological approaches, the subjective nature of some aspects of methodology (particularly in relation to data-driven approaches), the different food groups and definitions of items included within these food groups, and different treatment of alcohol intake across dietary patterns approaches and studies.9 Specifically, with respect to reduced rank regression, there has been considerable variability in the intermediate markers (different combinations of nutrients and different combinations of disease biomarkers) that have been used, even when examining the same health outcomes

D. Application of Dietary Patterns:- To Nutrition Science Dietary pattern methods can be used in a range of study designs and across a range of nutrition science questions and applications, including etiological research using observational and experimental designs, behavioral research, monitoring and surveillance, and in dietary guideline development. Given the diversity of methods described previously, an important consideration is to ensure that the most appropriate method is used to answer a particular research question

Health risk can be defined as “a factor that raises the probability of adverse health outcomes” . Risk can be connected with the causal chain of events over time, consisting of socioeconomic factors, environmental and community conditions, and individual behavior. These risk roots may be used as intervention points . Behaviors with a strong influence on health are tobacco use, alcohol consumption, physical activity and diet, sexual practices, and disease screening . An essential factor of human physical and mental development is diet. It is fundamental to human health and wellbeing across the lifespan .

Diet refers to the foods and beverages a person consumes, eats and drinks. Specific kind of diet is designed with the types of foods and beverages a person chooses, like vegetarian diet, a weight-loss diet. Thus, the term diet does not mean a restrictive food plan associated with weight loss. Dietary patterns are defined as the amounts, proportions, variety, or combination of different foods, beverages, and nutrients in the diet, and the frequency with which they are commonly consumed. Many social, demographic, and individual factors can influence dietary patterns. Not individual food selections, but the balance of foods selected over time can benefit or harm health .

Deterioration of health is associated with inadequate nutrition. The term ‘nutritional disorders’ covers a wide range of conditions that are primarily nutritional or nutrition is an important factor in their etiology. They may include deficiencies or excesses in the diet, chronic diseases that have been stimulated by a dietary component, as well as developmental abnormalities in which diet has no role in etiology, but for which specific dietary intervention is an essential part of management (e.g., phenylketonuria), the interaction of foods and nutrients with drugs, food allergies. Eating disorders are not primarily nutritional disorders, but have important nutritional effects and significant metabolic consequences .

Dietary assessment methods:- It is difficult to measure human behavior, especially to measure dietary exposures and capture the effects of eating behaviors. Diet intake of humans is assessed by objective observation and subjective report. Objective observation can be done using a duplicate diet approach or food consumption record. Duplicate diet approach with direct analysis gives actual intake information throughout a specific period. Inherent strength is possibility of measurement of dietary exposures (e.g., environmental contaminants), but it not suitable for large-scale studies. Food consumption record is objective observation that ought to be done by trained staff at the household level. It obtains actual intake information throughout a specific period, but on individual level dietary consumption is not accurate. It is method of choice for those with low literacy or those who prepare most meals at home, and it is not suitable among those frequently eat outside the home .

Meal patterns :- To capture the interaction of nutrients and bioactive compounds within the whole diet, as people consume combinations of foods as meals and snacks, it is important to analyze meal patterns. To analyze contributions of meal patterns (also referred to as eating patterns) to energy and nutrient intakes and overall diet quality first the characterization, definition and measurement of ‘meals’ ought to be described. Meal may mean different things according cultural background, so different dimensions of meal patterns are in use to standardized criteria (for example, time-of day, number of hot/cold eating events). A main meal (for example, breakfast, lunch or dinner) or a smaller-sized meal (for example, supper or snack) are used to describe individuals’ eating patterns. The terms ‘eating occasion’ (EO) or ‘eating event’ are used in defining any occasion where food or drink is consumed, so incorporates all meal types. A minimum energy criterion as part of the meal definition also can be included. According to this criterion, EO is only treated as an EO if it contributes a minimum amount of energy (for example, 210 kJ). The different definitions of an EO greatly affected the results of the association between eating frequency and BMI.

Meals are multidimensional and can be classified according to three constructs: (1) patterning (for example, frequency, spacing, regularity, skipping, timing); (2) format (for example, types of food combinations, sequencing of foods, nutrient profile/content); and (3) context (for example, eating with others or with the family, eating in front of the television or out of the home). However, due to the limited dietary assessment methods available, most research has focused on meal patterning .

Two major eating patterns were identified, which were qualitatively similar across the two FFQs and the diet records. So called 'prudent pattern' is characterized by a higher intake of vegetables, fruits, legumes, whole grains, and fish, whereas so called 'western pattern', is characterized by a higher intake of processed meat, red meat, butter, high-fat dairy products, eggs, and refined grains .The methods of choice to assess meals are food diaries and 24 h recalls with collection data on time of eating, and contextual information (for example, location of eating, presence of others), as well as self-identified meals. FFQ provide estimates of the frequency and types of foods that are usually consumed, and there is need for additional questionnaires to collect information on meal patterns .

Diet quality index:- Diet quality index is the most common measure used to assess overall diet quality. It is constructed on the basis of prevailing dietary recommendations, thus it is a summary score of the degree to which an individual's diet conforms to specific dietary recommendations. It reflects an individual's adherence to the dietary guidelines for the country of the sample population (for example, the Healthy Eating Index (HEI), and the Dietary Guidelines Index (DGI)), or adherence to other dietary recommendation: a traditional Mediterranean diet score; Dietary Approaches to Stop Hypertension diet score; a dietary approach to prevent heart disease diet score (Optimal Macronutrient Intake Trial to Prevent Heart Disease score)

Eating patterns in ED:-Main characteristic of anorectics eating behavior is a restriction of overall food intake, while vomiting/purging and intermittent starvation of bulimics is main mechanism of avoiding weight gain. The most commonly findings of food restriction are specific carbohydrate avoidance and, to a lesser degree, fat exclusion. However, anorectics and bulimics differ from each other with regard to food consumption patterns. Bulimics avoid bread and cereals, so they have less of their protein, fat, and carbohydrate energy from the bread/cereal group. On the other hand, anorectics prefer bread and cereals, at the same time trying to eliminate fat from their diets. Bread and cereals are thus the distinguishing feature between the ED groups.

The medical and psychiatric consequences of eating disorders are numerous. Some consequences can be reversed with weight restoration and resumption of normal eating behaviors. On the other hand, other complications, such as low bone mineral density (BMD), can persist after disease resolution causing is associated prolonged increased fracture risk. Some form of ED can progress in severe obesity Eating disorders can affect people of all body weights and shapes. They can occur even in people, who look healthy, such as athletes. The origin of eating disorders has not been fully elucidated. Risk factors for all eating disorders involve a combination of genetic, biological, behavioral, psychological, and social issues . Analyzing food consumption as dietary patterns may provide a comprehensive approach to disease prevention or treatment. It can enhance conceptual understanding of human dietary practice, and provide guidance for nutrition intervention and education. The overall patterns of dietary intake might be easy for the public to interpret or translate into diets. Therefore, an emphasis on foods and beverages has improved translation to dietary recommendations for the general population .

The bread/cereal avoiding can be explain with bulimics attitude that carbohydrates from bread and cereals are particularly "fattening". Even their fear of carbohydrates, their diet contains a substantial proportion of carbohydrates from fruits and vegetables. Mostly, bulimics rate vegetables, fruit, lean meat as "safe", while cookies, bread, cakes, and fried are consider as "forbidden" foods. Consequence of this is that if the bulimic eats anything outside her pre established dietary “allowance,” she immediately resorts to binge eating. As the food choice among bulimics has often been demonstrated to be very narrow the non-purged diet consisted mainly of salads and diet sodas. Anorectics on the other hand, have often been found to eat the same food every day, with explicated fear of “fatty” products .

Eating patterns in individuals with anorexia nervosa:- The mean generalization of AN is caloric restriction that resulted in weight loss. Restriction is greater during the more severe phases of the disorder. Beyond this restriction great variability in the diet patterns can be found. A regular meal and snack pattern can have approximately six eating episodes per day, in form of three meals and three snacks per day. Mostly, regular meals pattern is associated with a high-quality diet but restricted calorie. Inadequate calories during each eating episode are due to nature of insufficient quantities, or low caloric density food choices. This mainly rigid dietary pattern is characteristic of restrictive type AN. Irregular eating patterns have fewer eating episodes on purge-only days, and more eating episodes on binge days (with or without purging) Thus, less regular eating patterns are associated with loss of control eating. Meals are skipped with long intervals without eating at binge eating/purging type AN. Those with the BE/P type consume breakfast and dinner significantly less often than those with restricting type, and consume mid-morning snack and mid-afternoon sack significantly less often than those with restricting type. Among those with AN-BE/P, skipping dinner is associated with a greater number of binge eating episodes, while skipping breakfast is associated with a greater number of purging episodes. It may be the main mechanism associated with the development and maintenance of binge eating and purging. This mechanism suggests that dietary restraint leads to binge eating, which may lead to purging, and this in turn leads to a vicious cycle of increased efforts to restrict eating again. There is possibility that AN-BE/P often have higher eating disorder severity, more co-morbidities and worse prognosis than patients with AN-R .

Eating patterns in individuals with bulimia:- The bulimics eating pattern can be described as intermittent starvation (i.e. non-purged diet during the restrictive or compensatory phase), interrupted by bouts of binge eating .In the single-course normal meal, bulimics eat less on average than healthy non bulimics. In patients with BN, objective food consumption ranges, in a scene of total energy consumption, as well as of energy intake per binge episode and the frequency of binge episodes. There is significant difference in the calories consumed by patients with BN during binge episodes compared to non binge meals .Thus, objective food consumption in a laboratory setting ranged from 7101 to 9360 kcal per 24 h and from 3030 to 4479 kcal per binge episode. However, subjective food records showed total energy consumption to range from 3117 to 4275 kcal per day and from 1173 to 2415 kcal per binge episode . Even energy deprivation and malnutrition are often thought to be key factors in the maintenance of bulimia nervosa, it is unclear how much energy is actually available to BN patients' metabolism because the contribution of food consumed during binge eating is hard to evaluated .

Differences in binge behavior between bulimia nervosa and binge-eating disorder subjects:- Binge eating is defined as the consumption of a large amount of food in a short period of time accompanied by a sense of lack of control over eating **,** Binge eating has historically been associated with bulimia nervosa and the bulimia nervosa subjects eat more than BED subjects when presented with the same types of foods. It can be explained with fact that they allow themselves to purge following a binge.

CONCLUSION

Dietary patterns methods provide an important tool for studying many nutrition questions and can provide important insights into dietary behaviors and associations with health outcomes. A range of methods can be used for dietary patterns analysis, and there is a need to develop greater consensus in the use, application, and reporting of dietary patterns research. It is important to consider the continuum of dietary intake when understanding the role of diet in health rather than focusing solely on nutrients or foods, and it is critical that we integrate dietary pattern approaches when developing nutrition policies and guidelines. The detailed description of the disturbances in eating behavior not only helps to identify diagnostic criteria associated with each disorder, but also provide a foundation for the development of treatment interventions . Individuals who restrict caloric intake or consume meals and snacks with irregular frequency tend to engage in more frequent binge eating episodes. An irregular meal pattern of less than three meals a day is associated with more binge-eating episodes Specific dietary restriction behaviors, like reducing caloric intake by reducing portion sizes can increase risk for binge eating behaviors. Thus, it is important to identify dietary restriction behaviors that are associated with the onset of binge eating to cease it. A decrease in dietary restriction is a critical component for a successful reduction of binge eating behaviors across eating disorder diagnoses .

REFERENCES

1. Ayling RM. Nutritional disorders and their management. In: Marshall WJ, Lapsley M, Day A, et al., editors. Clinical Biochemistry Metabolic and Clinical Aspects. Edinburgh: Elsevier; 2014. pp. 200-213.
2. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. Fifth ed. Arlington, VA: American Psychiatric Association; 2013
3. Commission on Social Determinants of Health. Closing the Gap in a Generation: Health Equity through Action on the Social Determinants of Health. World Health Organization, Geneva; 2008
4. Committee DGA. Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services. Washington, DC: U.S. Department of Agriculture, Agricultural Research Service; 2020
5. Drabkin A, Rothman MS, Wassenaar E, Mascalo M, Mehler PS. Assessment and clinical management of bone disease in adults with eating disorders: A review. Journal of Eating Disorders. 2017;5:42
6. Elran-Barak R, Sztainer M, Goldschmidt AB, Crow SJ, Peterson CB, Hill LL, et al. Dietary restriction behaviors and binge eating in anorexia nervosa, bulimia nervosa and binge eating disorder: Trans-diagnostic examination of the restraint model. Eating Behaviors. 2015;18:192-196
7. Fitzgibbon ML, Blackman LR. Binge eating disorder and bulimia nervosa: Differences in the quality and quantity of binge eating episodes. The International Journal of Eating Disorders. 2000;27(2):238-243
8. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE. The eating attitudes test: Psychometric features and clinical correlates. Psychological Medicine.2019;12(4):871-878
9. Huse DM, Lucas AR. Dietary patterns in anorexia nervosa. The American Journal of Clinical Nutrition.2000;40:251-254
10. Institute of Medicine. Health and Behavior; the Interplay of Biological, Behavioral, and Societal Influences. Washington, DC: National Academy Press; 2011
11. Hu FB. Dietary pattern analysis: A new direction in nutritional epidemiology. Current Opinion in Lipidology. 2002;13:3-9
12. Jáuregui-Lobera I, Bolaños-Ríos P. Choice of diet in patients with anorexia nervosa. Nutrición Hospitalaria. 2009;24(6):682-687

13. Leech RM, Worsley A, Timperio A, McNaughton SA. Understanding meal patterns: Definitions, methodology and impact on nutrient intake and diet quality. Nutrition Research Reviews. 2015;28:1-21
14. Kant AK. Indices of overall diet quality: a review. J Am Diet Assoc.2018:785e791.
15. Kennedy ET, Ohls J, Carlson S, Fleming K. The healthy eating index: design and applications. J Am Diet Assoc. 2010(10): 1103e1108.
16. Kant AK, Block G, Schatzkin A, Ziegler RG, Nestle M. Dietary diversity in the US
17. Margetts BM, Campbell NA, Armstrong BK. Summarizing dietary patterns using multivariate analysis. J Hum Nutr. 2019;35(4): 281e286.
18. Maloney MJ, McGuire JB, Daniels SR. Reliability testing of a children's version of the eating attitude test. Journal of the American Academy of Child and Adolescent Psychiatry.206;27(5):541-543
19. Nicely TA, Lane-Loney S, Masciulli E, Hollenbeak CS, Ornstein RM. Prevalence and characteristics of avoidant/restrictive food intake disorder in a cohort of young patients in day treatment for eating disorders. Journal of Eating Disorders. 2014;2(1):21-28
20. National Institutes of Mental Health. Eating disorders. About More than Food. NIH Publication No. 21-MH-4901 Revised. National Institutes of Mental Health, Bethesda; 2021
21. Naska A, Lagiou A, Lagiou P. Dietary assessment methods in epidemiological research: Current state of the art and future prospects [version 1; referees: 3 approved]. F1000Research. 2017;6(F1000 Faculty Rev):926
22. population, NHANES II, 1976-1980. J Am Diet Assoc. 2021(12):1526e1531.
23. Schwerin HS, Stanton JL, Riley Jr AM, et al. Food eating patterns and health: a reexamination of the Ten-State and HANES I surveys. Am J Clin Nutr. 2003;34(4):568e580.
24. Shim JS, Oh K, Kim HC, et al. Dietary assessment methods in epidemiologic studies. Epidemiology Health. 2014;36:e2014009
25. Schwerin HS, Stanton JL, Smith JL, Riley Jr AM, Brett BE. Food, eating habits, and health: a further examination of the relationship between food eating patterns and nutritional health. Am J Clin Nutr. 2012;35(5 Suppl):1319e1325.
26. Van der Ster WG, Norring C, Lennernas MA, Holmgren S. Food selection in anorectics and bulimics: Food items, nutrient content and nutrient density. Journal of the American College of Nutrition. 2015;14(3):271-277
27. Van der Ster WG, Norring C, Holmgren S. Selective dieting patterns among anorectics and bulimics at the onset of eating disorders. European Eating Disorders Review. 2017;2(4):221-232
28. World Health Organization. Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risk Factors. World Health Organization, Geneva; 2009
29. World Health Organization. Diet, Nutrition and the Prevention of Chronic Diseases. Technical Report Series No. 916. World Health Organization, Geneva; 2003.
30. Whitney EN, Rolfes SR. Understanding Nutrition. 15th ed. Boston: Cengage; 2017. pp. 3-69