Dietary Patterns and Chronic Kidney Disease Risk

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Introduction:

Healthy dietary patterns have crucial impacts on the prevention of chronic diseases like type -II diabetes and cardiovascular disease (CVD). Diet plays a decisive role in mitigating various metabolic syndromes including cancer, type-II diabetes and CVD, etc. Adherence to eating guidelines are directly associated with AHEI (Alternative Healthy Eating Index) and HEI (Healthy Eating Index). However, CKD (Chronic Kidney Disease) has direct links with diabetes and CVD which enhance the risk factor to manifold. As a study concluded that low-leveled adherence to diet patters and diet style increases the risk of kidney disease up to sixteen per cent compared to high adherence with healthy diet. Meanwhile, the association between HEI and AHEI with Mediterranean diet score through light on CKD occurrence. Various criteria of scoring system emphasize various food group combinations. In this context, the recent developments are index; HEI-2015 where kidney disease risks still needs some explorations.

Moreover, a massive proportion of adults suffers CKD (Chronic Kidney Disease) worldwide and has become a challenge to global public health (Hill et al., 2016). Multiple shreds of evidence report that healthy diet adoption in alliance with good diet pattern reduces the risk of CKD. Meanwhile, AHEI (Alternative Healthy Eating Index), HEI (Healthy Eating Index) and Mediterranean diet scores have strong linkages with reducing cardiovascular risks. On the other hand, such specific association needs more consideration and research to determine CKD around the globe.

Purpose of the Study:

The primary purpose of the study is to evaluate the relationship among several entities HEI, AHEI, and Mediterranean diet scores and the risk of developing CKD (Chronic Kidney Disease). In this context, the primary aim revolves around the contribution to preventing kidney diseases in public by considering the existing knowledge. In addition, this struggle has to keep main focus on community driven cohort with normal and optimal kidney functioning. The study has primary desire to investigate the perspectives of dietary scores and development of kidney malfunctioning and diseases.

Materials and Methods:

ARIC (Atherosclerosis Risk in Communities) is hereby used to investigate and analyze the association between dietary patterns and respective impacts on kidney risk. The population sampling includes middle aged adult which number in 12,155 with age bracket of 35-48 years. Multiple indices like HEI-2015 and Mediterranean dietary scores are evaluated, where minimal usage of AHEI-2010 was also observed. Categories of participants into multiple quintiles were listed based on scores which indicated kidney disease severity from hospitalization to death. The renal disease was considered as end stage rendered if glomerular filtration rate reduced to 60 mL/min/1.73 m2. The semi-quantitative food frequency questionnaire tool was used to assess dietary intake in two visits. However, all the three dietary scores, i.e., HEI-2015, AHEI-2010, and Mediterranean patterns scores were used to investigate adherence to healthy diet. Researchers selected cause-specific hazard models to estimate the overall kidney risk. Meanwhile, multiple covariates about the life and social status of participants were used as measurement of baseline. However, for statistical analysis the software tool of Stata with “version 14.0; StataCorp” was used.

Results:

The median follow-up of twenty four years collaborated as sample of about 3980 cases concerning the incident CKD. Results depict that participants have two categories, i.e., higher adherence to HEI-2015, AHEI-2010, and Mediterranean dietary scores and lower scorers. The higher scorers include the participants having attributes of being female, high educational backgrounds, bright income level, non-smokers, and physically active. The lower scorers category demonstrated the vice versa attributes. In addition, 3 dietary scores are associated with lower CKD risk, i.e. P-trend < 0.001. The CKD risk that is HR: 0.83; 95% CI: 0.74, 0.92 is observed 17% minimal on the high quintile of HEI-2015 compared to the lowest ones. In addition, quintile 5 of AHEI-2010 (instead of AHEI-2015) and Mediterranean dietary pattern score demonstrated about lower risk of 20% and 13% of chronic kidney disease risk compared to individuals with quintile 1.

Meanwhile, moderate to strong correlation between scores indicate similarities. There is reported linear association between higher and lower risk of CKD which is related to adjustment factors like age, sex, qualification, and income status and health status. In addition, dietary score component is analyzed where consumptions of particular group of food is associated with low risk of kidney disease. In AHEI-2010 and Mediterranean diet scores have same association in the past studies.

Discussion / Conclusion:

The study under consideration examined the risk of kidney disease development in association with adherence to healthy dietary patterns. The middle aged adult population was evaluated with respect to three dietary scores, i.e. HEI-2015, AHEI-2010, and Mediterranean diet scores. The findings suggest

that higher adherence to these scores is directly linked with lower kidney disease risk development. As participants with higher dietary scores like 17%, 20%, and 13% have the lower kidney development risks compared to lower scores. However, a linear trend is observed where 7-8% scores lower the kidney disease risk and alternatively, increases the dietary score according to standard deviation results. It is pertinent to mention that these associations have constant readings across various subgroups of selected population based on race, sex, obesity, hypertension, and diabetes, etc.

Moreover, the study also explored individual components concerning the dietary scores. Dietary intakes have great impact on kidney disease risk developments. For example, the moderate consumption of alcohol, intake of dairy products, nuts, grains and plant nutrients lowers the risk of kidney disease development risk to manifold. Contrarily, the higher intake of processed meat along with total protein component increases the same risk in adults around the globe. Similarly, the previous researches have pointed out the inverse associations of healthy dietary patterns and risk of kidney disease development like DASH score readings. However, several studies have specifically concluded the relationship among HEI, AHEI, or Mediterranean dietary scores with kidney disease risk. However, the current study investigated such relationship with latest version of HEI (HEI-2015).

Various suggestions devised by the current study include the potential mechanism where healthy diet is recommended for reducing kidney disease risk. The suggestions propose that such potential mechanisms may include reduced inflammation, leaned dietary acid load, and minimal endothelial malfunctioning, etc. These drawbacks are directly related to kidney diseases and cardiovascular risk developments in humans. In addition, balance diet rich in vegetables, fruits and nuts in alliance with low intake of red meat lower the dietary acid burden. Ultimately, such precautions lower the kidney disease risks. Another suggestion of the study is to utilize plant source proteins instead of animal source proteins to assure the normal kidney functioning. Similarly, another attribute of the study is its strengths that revolve around diverse cohort, augmented follow-up time and comprehensive data analysis about kidney disease.

However, the study has some limitations including underestimation of dietary nutrients, misunderstanding of reporting dietary data along with non-availability of baseline to measure kidney damage and failure perspective. Although certain efforts were made to maintain potential confounders but residential confounding looks like certain possible limitation. In addition, the broad-based generalizations did not enable the researchers to focus on streamlined and pointed form of kidney diseases development.

Further, the findings of the study lead to several implications to public health policymaking along with clinical practices. The dietary scores incorporated several components in the study like various food groups, division of nutrients, and importance of dietary patterns and overall impact of daily diet intake. The results highlighted the recommendations for general public to reduce the risk factors for kidney disease development. In addition, it also proposes patterns for other chronic conditions of human body which are associated with non-optimal diet options.

References

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