

# Incidence of Stroke in Hemodialysis Patients with Central Venous Catheter: A Systematic Review

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Article Info	ABSTRACT
<b>Article type:</b> Original article	<b>Background and Aim:</b> End Stage Renal Disease (ESRD) patients require hemodialysis (HD) as a common treatment. HD needs a vascular access (VA) and Central venous catheter (CVC) placement is a highly used VA for those patients that do not have a matured arteriovenous fistula (AVF). Unfortunately, the risk of stroke in patients with ESRD is 5–30 times greater than that in the general population and our recent studies show risk of ischemic stroke in patients with chronic kidney disease (CKD): <b>Results:</b> Previous studies have resulted a different rates of stroke in HD patients. Whereas a 2014 study in Taiwan on 74,000 HD patients has reported “older age as an independent risk factor for both types of stroke” and the incidence of hospitalization for ischemic stroke and for hemorrhagic stroke in HD patients [per 10,000 person-years] have been 102.6 and 42.4, respectively. Moreover, another 2019 study on 37,623 HD patients in the same country, who have received CVC placement over 2000–10 and propensity score-matched individuals without CVC placement as the comparison cohort, has been resulted “compared with the comparison group, CVC placement increased the average annual ischemic stroke incidence [19.5 vs. 11.6 per 10,000 person-years]” but emphasizes that “CVC placement increases ischemic stroke risk, particularly in those aged 35 ≤ years”. Despite the resulted characteristics present increasing Stroke after CVC insertion, some studies focus on aged HD patients, meanwhile another part of the studies suggest, CVC placement increases ischemic stroke risk, particularly in young HD patients; And hence, these trends warrant further investigation about impact of patients' age. But more literature review specifies that “CVC placement”, “hypertension” and “diabetes mellitus” are stroke risk factors, respectively: <b>Conclusion:</b> The obtained results reaffirm that stroke is a CVC-related complication in HD patients, while according to our previous studies, AVF has much less complications, and so present study concludes: “For stroke prevention, preferably, the AVF is recommended over the CVC placement for HD patients who may not be eligible to receive a kidney transplant”. <b>Acknowledgment:</b> This work was supported by the Iran National Science Foundation (INSF) in the Post-Doctoral course of the corresponding author (Number: 97006815)
<b>Article History:</b> Received: 20 January 2020 Revised: 04 March 2020 Accepted: 14 May 2020	<b>Materials and Methods:</b> Our study reviews the research had analyzed a significant population of HD patients, focusing on the prevalence of stroke after the CVC, and have been published in the last two decades (2000-20). We used data mining methods for extracting novel and useful patterns from the inputted data, based on CRISP (CRoss Industry Standard Process for Data Mining) Process:
<b>Keywords:</b> Arteriovenous fistula Central venous catheter Hemodialysis Stroke Vascular access	