

Evidence Synthesis



Chamberlain College of Nursing

NR 716: Analytic Methods



Evidence Synthesis

In the United States, nearly 41,260 fresh cases of primary liver cancer will be discovered in 2022, and the most common liver cancer type is hepatocellular carcinoma (HCC) (American Cancer Society [ACS], 2022; Trung et al., 2018). However, even with substantial changes and encroachments in HCC therapy, the outcome for HCC patients remains disappointing, as recognized at an advanced stage (ACS, 2022; Huang et al., 2020). In addition, a lack of early diagnosis techniques and poor chemotherapy responses add to HCC's high death rate (ACS, 2022; Centers for Disease Control and Prevention [CDC], 2022; (National Cancer Institute [NCI], 2022; Zheng et al., 2018). Hence, more screening tests for early HCC discovery are required. It is decisive in clinical routine to scrutinize and evaluate for early detection of HCC. Three research studies (Huang et al., 2020; Trung et al., 2018; Zheng et al., 2018) discussed lab tests to find blood levels of lncRNAs, miRNAs, the serum lncRNA, and urothelial carcinoma associated 1 (UCA1) that are practical in recognizing patients with HCC, assisting in the diagnosis, and assisting with clinical practice for patients with early-stage HCC.

This paper aims to perform an evidence synthesis using three single-study quantitative research articles and three non-research evidence-based sources to evaluate research on current issues related to the early detection of HCC in combination with imaging studies in high-risk patients.

Analysis of the Practice Problem

HCC is one of the most aggressive carcinomas and the third major cause of cancer-related mortality worldwide (CDC, 2022; Huang et al., 2020; Trung et al., 2018; Zheng et al., 2018). In the United States, roughly 41,260 new cases of primary liver cancer will be detected in 2022, and nearly 30,520 individuals (20,420 men and 10,100 women) will yield to these cancers

(ACS, 2022). After that, in 1980, the prevalence of liver cancer more than tripled, while mortality rates folded (ACS, 2022). Liver cancer is more predominant in Southeast Asia and sub-Saharan Africa than in the United States (ACS, 2022). The estimated number of new cases of liver cancer in 2022 is 1350, and the estimated death rate in 2022 is 1100 in Illinois (ACS, 2022). Liver cancer incidence in Will County in the years 2015–2019: male count 158; the male rate was 8.5; and female count 63; the female rate was 3.3 (Illinois Department of Public Health [IDPH], 2021). HCC surveillance and treatments place a substantial economic burden on patients and payers, with annual expenses exceeding \$500 million in the US. Comparing the effectiveness of medical interventions requires integrating cost and clinical effectiveness (Likhitsup & Parikh, 2019).

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In clinical practice, it is vital to examine and evaluate for early detection of HCC (Huang et al., 2020; Trung et al., 2018). Ultrasound and serum alpha-fetoprotein (AFP) are suggested for closely monitoring and detecting the presence of HCC in high-risk groups (Huang et al., 2020; Trung et al., 2018; Zheng et al., 2018), and the most common method for evaluating worrisome HCC nodules is the fusion of AFP and imaging technology (Huang et al., 2020; Trung et al., 2018; Zheng et al., 2018). Understanding imaging data might be difficult for some patients, and AFP's low sensitivity and specificity need the development of biomarkers with improved sensitivity and specificity for HCC diagnosis (Huang et al., 2020; Trung et al., 2018; Zheng et al., 2018). Detecting blood levels of serum UCA1, lncRNAs, and miRNAs is useful for identifying patients with HCC, aiding in the diagnosis, and facilitating clinical treatment for patients with early-stage HCC (Huang et al., 2020; Trung et al., 2018; Zheng et al., 2018). Particularly, a high tumor grade, a large tumor size, a positive vascular invasion, and an