

1 **SUPPLEMENTARY SECTION**

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3 **Seroprevalence of Hepatitis B, C and D in Vietnam: a systematic review and meta-analysis**

4 **TLRHWESTERNPACIFIC-D-22-00076**

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6 **SEARCH STRATEGY**

7 **PubMed:**

8 Free text advanced search: 'Hepatitis B' OR 'Hepatitis C' OR 'Hepatitis D' AND 'Vietnam' AND
9 'Prevalence' with date filter 1990 – 2021 elicits 327 results.



Search: **Hepatitis B OR Hepatitis C OR Hepatitis D AND Vietnam AND Prevalence** Filters: **from 1990 - 2021**

327

((("hepatitis b"[MeSH Terms] OR "hepatitis b"[All Fields] OR ("hepatitis c"[MeSH Terms] OR "hepatitis c"[All Fields] OR "hepacivirus"[MeSH Terms] OR "hepacivirus"[All Fields]) OR ("hepatitis d"[MeSH Terms] OR "hepatitis d"[All Fields])) AND ("vietnam"[MeSH Terms] OR "vietnam"[All Fields] OR "vietnam s"[All Fields]) AND ("epidemiology"[MeSH Subheading] OR "epidemiology"[All Fields] OR "prevalence"[All Fields] OR "prevalence"[MeSH Terms] OR "prevalance"[All Fields] OR "prevalences"[All Fields] OR "prevalence s"[All Fields] OR "prevalent"[All Fields] OR "prevalently"[All Fields] OR "prevalents"[All Fields])) AND (1990:2021[pdat])

Translations

Hepatitis B: "hepatitis b"[MeSH Terms] OR "hepatitis b"[All Fields]

Hepatitis C: "hepatitis c"[MeSH Terms] OR "hepatitis c"[All Fields] OR "hepacivirus"[MeSH Terms] OR "hepacivirus"[All Fields]

Hepatitis D: "hepatitis d"[MeSH Terms] OR "hepatitis d"[All Fields]

Vietnam: "vietnam"[MeSH Terms] OR "vietnam"[All Fields] OR "vietnam's"[All Fields]

Prevalence: "epidemiology"[Subheading] OR "epidemiology"[All Fields] OR "prevalence"[All Fields] OR "prevalence"[MeSH Terms] OR "prevalance"[All Fields] OR "prevalences"[All Fields] OR "prevalence's"[All Fields] OR "prevalent"[All Fields] OR "prevalently"[All Fields] OR "prevalents"[All Fields]

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12 **Embase:**

13 Free text advanced search 'Hepatitis B' OR 'Hepatitis C' OR 'Hepatitis D' AND 'Vietnam' AND
14 'Prevalence' with date filter 1990 – 2021 in Embase Classic+Embase (1947 to 2022 March 11), Global
15 Health (OVID) (1973 to 2022 Week 10)

▲ Searches

Results Type

1 ► ((Hepatitis B or Hepatitis C or Hepatitis D) and Vietnam and prevalence).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kf, fx, dq, bt, id, cc]

370 Advanced

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1 **Full titles of included studies**

2 **Table S1: Hepatitis B studies (n=44)**

Title	Author
Short report: hepatitis B infection and severe Plasmodium falciparum malaria in Vietnamese adults	Barcus et al 2002
Prevalence of hepatitis A, B, C and E virus markers among patients with elevated levels of Alanine aminotransferase and Aspartate aminotransferase in Phnom Penh (Cambodia) and Nha Trang (Central Vietnam) [French]	Buchy et al 2004
Malaria in injection drug abusers in Vietnam	Chau et al 2002
Sexual practices, partner concurrency and high rates of sexually transmissible infections among male sex workers in three cities in Vietnam	Clatts et al 2015
Viral infections and chemical exposures as risk factors for hepatocellular carcinoma in Vietnam	Cordier et al 1993
Acute viral hepatitis in Hanoi, Viet Nam	Corwin et al 1996
High prevalences of hepatitis B and C virus infections among adults living in Binh Thuan province, Vietnam	Do et al 2015
A multicentre molecular analysis of hepatitis B and blood-borne virus coinfections in Viet Nam	Dunford et al 2012
Risk factors for hepatitis B infection in rural Vietnam	Duong et al 2009
Hepatitis B and C virus infections among patients with end stage renal disease in a low-resourced hemodialysis center in Vietnam: a cross-sectional study	Duong et al 2015 i
Challenges of hemodialysis in Vietnam: experience from the first standardized district dialysis unit in Ho Chi Minh City	Duong et al 2015 ii
Shewhart Charts and Two-Monthly Screening Interval to Monitor Hepatitis C and Hepatitis B Virus Infections in Two-Year Prospective Cohort Study of Hemodialysis Patients in Vietnam	Duong et al 2016
Clinical and biological characteristics of HIV infected and uninfected IDUs in HCMC vietnam	Follezou et al 1999
Prevalence of and Factors Associated with Reproductive Tract Infections among Pregnant Women in Ten Communes in Nghe An Province, Vietnam	Goto et al 2005
Hepatitis B infection in rural Vietnam and the implications for a national program of infant immunization	Hipgrave et al 2003
Impact of a methadone maintenance therapy pilot in Vietnam and its role in a scaled-up response	Hoang et al 2015
Discrepancies in prevalence trends for HIV, hepatitis B virus, and hepatitis C virus in Haiphong, Vietnam from 2007 to 2012	Ishizaki et al 2017
Prevalence of hepatitis B, hepatitis C and GB virus C /hepatitis G virus infections in liver disease patients and habitants in HCM vietnam	Kakumu et al 1998
Seroprevalence of hepatitis viruses in children in rural Viet Nam	Katellaris et al 1995
Impact of Nucleic Acid Testing (NAT) on screening blood donors at a tertiary center in Vietnam	Kha To et al 2020
Reproductive tract infections including sexually transmitted infections: a population-based study of women of reproductive age in a rural district of Vietnam	Lan et al 2008
Epidemiology of hepatitis C virus infection in Vietnam. [French]	Lien et al 1997

High hepatitis C virus infection among female sex workers in Viet Nam: strong correlation with HIV and injection drug use	Linh-Vi et al 2019
The Prevalence and Components of Metabolic Syndrome in Men from Infertile Couples and Its Relation on Semen Analysis	Minh et al 2021
Hepatitis B virus infection among pregnant mothers and children after the introduction of the universal vaccination program in Central Vietnam	Miyakawa et al 2021
Findings from Integrated Behavioral and Biologic Survey among males who inject drugs (MWID)-Vietnam, 2009-2010: Evidence of the need for an integrated response to HIV, hepatitis B virus, and hepatitis C virus	Nadol et al 2015
High hepatitis C virus (HCV) prevalence among men who have sex with men (MSM) in Vietnam and associated risk factors: 2010 Vietnam Integrated Behavioural and Biologic Cross-Sectional Survey	Nadol et al 2016
Hepatitis C and B virus infections in populations at low or high risk in Ho Chi Minh and Hanoi, Vietnam	Nakata et al 1994
High rates of positive viral hepatitis serologic in patients attending a city hospital challenge healthcare providers	Ngo et al 2009
The impact of dengue haemorrhagic fever on liver function	Nguyen et al 1997
Highly endemic hepatitis B infection in rural Vietnam	Nguyen et al 2006
Prevalence of HBV infection among different HIV-risk groups in Hai Phong, Vietnam	Nguyen et al 2011
A reduction in chronic hepatitis B virus infection prevalence among children in Vietnam demonstrates the importance of vaccination	Nguyen et al 2014
High burden of hepatocellular carcinoma and viral hepatitis in Southern and Central Vietnam: Experience of a large tertiary referral center, 2010 to 2016	Nguyen-Dinh et al 2018
Hepatitis B Infection and Mother-to-Child Transmission in Haiphong, Vietnam: A Cohort Study with Implications for Interventions	Pham et al 2020
Prevalence and factors associated with chronic Hepatitis B infection among adults in the Central Highland, Vietnam	Pham et al 2020 ii
Risks for HIV, HBV, and HCV infections among male injection drug users in northern Vietnam: A case-control study	Quan et al 2009
Markers of hepatitis C and B virus infections among blood donors in Ho Chi Minh City and Hanoi, Vietnam.	Song et al 1994
Prevalence of hepatitis B and hepatitis C in healthy adults in Ho Chi Minh City	Terakawa et al 2011
Baseline Characteristics and Treatment Cost of Hepatitis C at Hospital for Tropical Diseases, Ho Chi Minh City, Vietnam in Direct-Acting Antiviral Treatment Era	Thanh et al 2020
Liver involvement associated with dengue infection in adults in Vietnam	Trung et al 2010
Hepatitis B in Ho Chi Minh City, Viet Nam	Van Be et al 1992
Epidemiological Characteristics of Advanced Hepatocellular Carcinoma in the Northern Region of Vietnam	Van Quang Le et al 2019
Prevalence of hepatitis B & hepatitis C virus infections in potential blood donors in rural Vietnam.	Viet et al 2012

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1 **Table S2: Hepatitis C studies (n=44)**

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Title	Author
Prevalence of hepatitis A, B, C and E virus markers among patients with elevated levels of Alanine aminotransferase and Aspartate aminotransferase in Phnom Penh (Cambodia) and Nha Trang (Central Vietnam) [French]	Buchy et al 2004
Malaria in injection drug abusers in Vietnam	Chau et al 2002
Prevalence and incidence of HCV infection among Vietnam heroin users with recent onset of injection	Clatts et al 2009
HIV, Hepatitis C, and Other Sexually Transmitted Infections Among Male Sex Workers in Ho Chi Minh City, Vietnam	Colby et al 2016
Viral infections and chemical exposures as risk factors for hepatocellular carcinoma in Vietnam	Cordier et al 1993
Acute viral hepatitis in Hanoi, Viet Nam	Corwin et al 1996
High prevalences of hepatitis B and C virus infections among adults living in Binh Thuan province, Vietnam	Do et al 2015
Hepatitis C virus in Vietnam: high prevalence of infection in dialysis and multi-transfused patients involving diverse and novel virus variants	Dunford et al 2012
Hepatitis B and C virus infections among patients with end stage renal disease in a low-resourced hemodialysis center in Vietnam: a cross-sectional study	Duong et al 2015 i
Challenges of hemodialysis in Vietnam: experience from the first standardized district dialysis unit in Ho Chi Minh City	Duong et al 2015 ii
Shewhart Charts and Two-Monthly Screening Interval to Monitor Hepatitis C and Hepatitis B Virus Infections in Two-Year Prospective Cohort Study of Hemodialysis Patients in Vietnam	Duong et al 2016
Risk Behaviors for HIV and HCV Infection Among People Who Inject Drugs in Hai Phong, Viet Nam, 2014	Duong et al 2018
Screening haemodialysis patients for hepatitis C in Vietnam: The inconsistency between common hepatitis C virus serological and virological tests	Duong et al 2019
Clinical and biological characteristics of HIV infected and uninfected IDUs in HCMC vietnam	Follezou et al 1999
Impact of a methadone maintenance therapy pilot in Vietnam and its role in a scaled-up response	Hoang et al 2015
Discrepancies in prevalence trends for HIV, hepatitis B virus, and hepatitis C virus in Haiphong, Vietnam from 2007 to 2012	Ishizaki et al 2017
Prevalence of hepatitis B, hepatitis C and GB virus C /hepatitis G virus infections in liver disease patients and habitants in HCM vietnam	Kakumu et al 1998
Seroprevalence of hepatitis viruses in children in rural Viet Nam	Katellaris et al 1995
Impact of Nucleic Acid Testing (NAT) on screening blood donors at a tertiary center in Vietnam	Kha To et al
Epidemiology of hepatitis C virus infection in Vietnam. [French]	Lien et al 1997
High hepatitis C virus infection among female sex workers in Viet Nam: strong correlation with HIV and injection drug use	Linh-Vi et al 2019
HIV control programs reduce HIV incidence but not HCV incidence among people who inject drugs in HaiPhong, Vietnam	Molès et al 2020

Findings from Integrated Behavioral and Biologic Survey among males who inject drugs (MWID)-Vietnam, 2009-2010: Evidence of the need for an integrated response to HIV, hepatitis B virus, and hepatitis C virus	Nadol et al 2015
High hepatitis C virus (HCV) prevalence among men who have sex with men (MSM) in Vietnam and associated risk factors: 2010 Vietnam Integrated Behavioural and Biologic Cross-Sectional Survey	Nadol et al 2016
Findings from Integrated Behavioral and Biologic Survey among males who inject drugs (MWID)-Vietnam, 2009-2010: Evidence of the need for an integrated response to HIV, hepatitis B virus, and hepatitis C virus	Nadol et al 2016
Hepatitis C and B virus infections in populations at low or high risk in Ho Chi Minh and Hanoi, Vietnam	Nakata et al 1994
Lack of association between acquisition of TT virus and risk behavior for HIV and HCV infection in Vietnam	Nerurkar et al 1999
High rates of positive viral hepatitis serologic in patients attending a city hospital challenge healthcare providers	Ngo et al 2009
The impact of dengue haemorrhagic fever on liver function	Nguyen et al 1997
Prevalence and risk factors for hepatitis C infection in rural north vietnam	Nguyen et al 2007
Acceptability and Usability of HCV Self-Testing in High Risk Populations in Vietnam	Nguyen et al 2021
High burden of hepatocellular carcinoma and viral hepatitis in Southern and Central Vietnam: Experience of a large tertiary referral center, 2010 to 2016	Nguyen-Dinh et al 2018
Risks for HIV, HBV, and HCV infections among male injection drug users in northern Vietnam: A case-control study	Quan et al 2009
Hepatitis C virus seroprevalence in the general female population from 8 countries	Quesada et al 2015
Towards Targeted Interventions in Low- and Middle-Income Countries: Risk Profiles of People Who Inject Drugs in Haiphong (Vietnam)	Riondel et al 2020
The evolution of hepatitis C in the kidney transplant recipient at CHO ray hospital	Sinh et al 2012
Markers of hepatitis C and B virus infections among blood donors in Ho Chi Minh City and Hanoi, Vietnam.	Song et al 1994
Multiple routes of hepatitis C virus transmission among injection drug users in Hai Phong, Northern Vietnam	Tanimoto et al 2010
Prevalence of hepatitis B and hepatitis C in healthy adults in Ho Chi Minh City	Terakawa et al 2011
Prevalence of hepatitis virus types B through E and genotypic distribution of HBV and HCV in Ho Chi Minh City, Vietnam	Tran et al 2003
Liver involvement associated with dengue infection in adults in Vietnam	Trung et al 2010
Epidemiological Characteristics of Advanced Hepatocellular Carcinoma in the Northern Region of Vietnam	Van Quang et al 2019
Prevalence of hepatitis B & hepatitis C virus infections in potential blood donors in rural Vietnam.	Viet et al 2012
Prevalence and correlates of HCV mono-infection and HIV and HCV coinfection among persons who inject drugs in Vietnam	Zhang et al 2015

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1 **Table S3: HIV studies with HBV or HCV co-infection data (n=10)**

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Title	Author
TAHOD-LITE: Antiretroviral Treatment for Adult HIV Infection in Asia, 1998 to 2013	Boettiger et al 2015
HBV and HCV Coinfection among HIV/AIDS Patients in the National Hospital of Tropical Diseases, Vietnam	Bùi et al 2014
Prevalence of Opportunistic Infections and Associated Factors in HIV-Infected Men Who Have Sex With Men on Antiretroviral Therapy in Bach Mai Hospital, Hanoi, Vietnam: A Case-Control Study	Dang et al 2020
Epidemiology of hepatitis C virus infection in Vietnam. [French]	Lien et al 1997
Viral hepatitis among HIV+ patients in northern Vietnam	Mohan et al 2017
High Proportion of HIV-HCV Coinfected Patients with Advanced Liver Fibrosis Requiring Hepatitis C Treatment in Haiphong, Northern Vietnam (ANRS 12262)	Nguyen et al 2016
Factors associated with HIV RNA viral loads in ART-naïve patients: implications for treatment as prevention in concentrated epidemics	Rangarajan et al 2016
Penicilliosis and AIDS in Haiphong, Vietnam: evolution and predictive factors of death	Son et al 2014
Long-term viral suppression and immune recovery during first-line antiretroviral therapy: a study of an HIV-infected adult cohort in Hanoi, Vietnam	Tanuma et al 2017

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5 **Table S4: HDV studies (n=7)**

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Title	Author
HDV infection rates in northern Vietnam	Binh et al 2018
A multicentre molecular analysis of hepatitis B and blood-borne virus coinfections in Viet Nam	Dunford et al 2012
High prevalence of hepatitis delta virus among persons who inject drugs, Vietnam	Hall et al 2015
Predominance of HBV Genotype B and HDV Genotype 1 in Vietnamese Patients with Chronic Hepatitis	Nghiem et al 2021
Prevalence and genotype distribution of hepatitis delta virus among chronic hepatitis B carriers in Central Vietnam	Nguyen et al 2017
High prevalence and significance of hepatitis D virus infection among treatment-naïve HBsAg-positive patients in Northern Vietnam	Sy et al 2013
Prevalence of hepatitis virus types B through E and genotypic distribution of HBV and HCV in Ho Chi Minh City, Vietnam	Tran et al 2003

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1 **Table S5: Joanna Briggs Institute (JBI) critical appraisal checklist for prevalence data for all 72 included**
 2 **studies**

3 Critical appraisal of study quality was performed by BF (first author) and HVTK (third author). Discrepancies
 4 regarding study eligibility were resolved through discussion between investigators (HVTK, BF).

- 5 1. Was the sample frame appropriate to address the target population?
 6 2. Were study participants recruited in an appropriate way?
 7 3. Was the sample size adequate?
 8 4. Were the study subjects and setting described in detail?
 9 5. Was data analysis conducted with sufficient coverage of the identified sample?
 10 6. Were valid methods used for the identification of the condition?
 11 7. Was the condition measured in a standard, reliable way for all participants?
 12 8. Was there appropriate statistical analysis?
 13 9. Was the response rate adequate, and if not, was the low response rate managed appropriately?
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Study	JBI checklist indicators									Score	Comment
	1	2	3	4	5	6	7	8	9		
Barcus et al 2002	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	Non-random consecutive sampling, non-representative sample (severe malaria)
Binh et al 2018	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	Non-random consecutive sampling, non-representative sample (85% male)
Boettiger et al 2015	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Buchy et al 2004	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	7	Non-random consecutive sampling, underpowered
Bùi et al 2014	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random; entire centre's population
Chau et al 2002	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Clatts et al 2009	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random sampling; non-representative sample (male IVU only)
Clatts et al 2015	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random; non-representative (sex workers)
Colby et al 2016	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random sampling; non-representative (sex workers)
Cordier et al 1993	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random, non-representative, male HCC only
Corwin et al 1996	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Dang et al 2020	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Do et al 2015	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	8	Multi-stage cross-sectional
Dunford et al 2012	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Dunford et al 2012	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling

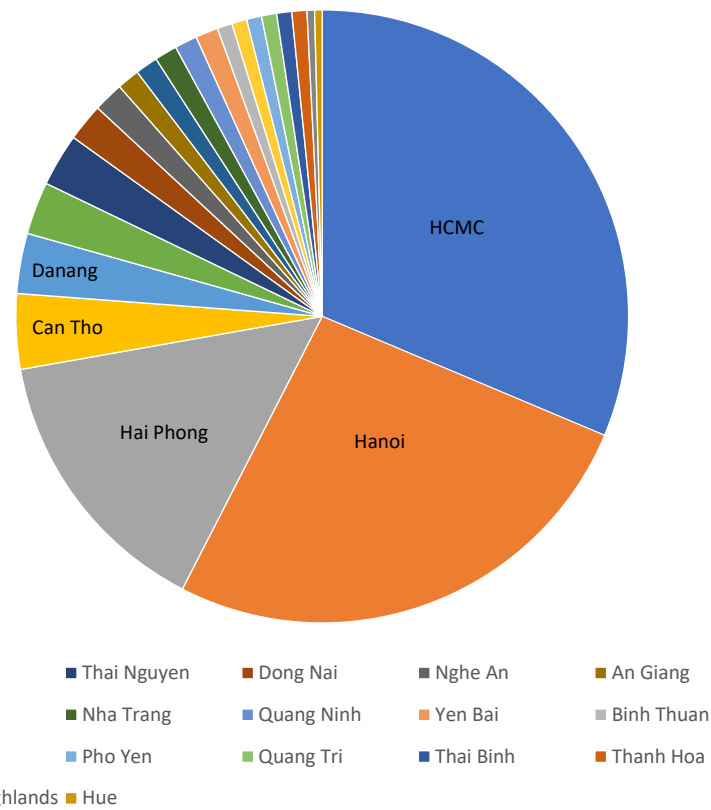
Duong et al 2009	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Cross sectional but non-representative rural sample
Duong et al 2015 i	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Duong et al 2015 ii	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Duong et al 2016	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random; entire centre population
Duong et al 2018	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Duong et al 2019	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random; entire centre population
Follezou et al 1999	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	6	Non-representative sample (very high rates HIV)
Goto et al 2005	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Hall et al 2015	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	7	Non-random consecutive sampling, lacks baseline characteristics
Hipgrave et al 2003	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	
Hoang et al 2015	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Ishizaki et al 2017	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Kakumu et al 1998	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling of hepatitis patients. Details of sampling strategy for general population lacking
Katellaris et al 1995	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	8	Under powered for HCV prevalence
Kha To et al 2020	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Lan et al 2008	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-representative sample (married women age 18-49)
Lien et al 1997	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-cross sectional sampling
Linh-Vi et al 2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	
Minh et al 2021	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	Non-random, non-representative sample (males from infertile couples)
Miyakawa et al 2021	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	7	Non-random sample, high drop out >30%
Mohan et al 2017	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random retrospective chart review
Molès et al 2020	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random response-driven sampling
Nadol et al 2015	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random response-driven sampling

Nadol et al 2016	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random response-driven sampling
Nakata et al 1994	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive and retrospective sampling
Nerurkar et al 1999	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	7	Non-random sampling, diagnostics were combo of sera or filter paperblotted whole blood
Nghiem et al 2021	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random, consecutive sampling
Ngo et al 2009	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	6	Non-random, consecutive sampling, non-representative sample (inpatients and outpatients), minimal baseline characteristics
Nguyen et al 1997	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	6	Non-random consecutive sampling, non-representative sample (patients with severe Dengue), under-powered for HCV
Nguyen et al 2006	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	
Nguyen et al 2007	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	
Nguyen et al 2011	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Nguyen et al 2014	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	
Nguyen et al 2017	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	Non-random consecutive sampling, non-representative
Nguyen-Dinh et al 2018	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random sampling, Oraquick diagnostics
Pham et al 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	Non-random retrospective sample
Pham et al 2020 ii	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	
Quan et al 2009	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	
Quesada et al 2015	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random snowball sampling using peer recruiters
Rangarajan et al 2016	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-representative sample (females only)
Riondel et al 2020	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Sinh et al 2012	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	7	Non-random response-driven sampling
Son et al 2014	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	6	Non-random consecutive sample, lacking baseline characteristics

Song et al 1994	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling, non-representative (inpatients with penicilliosis), under powered for HBV/HCV prevalence
Sy et al 2013	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random sampling
Tam et al 2016	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling, non-representative (HCV and HIV positive patients excluded)
Tanimoto et al 2010	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random response driven sampling
Tanuma et al 2017	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Terakawa et al 2011	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	Non-random sampling, non-representative (healthy workers at major companies)
Thanh et al 2020	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	Non-random consecutive sample, non-representative (HCV-infected outpatients)
Tran et al 2003	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	Non-random sampling, non-representative (healthy outpatients)
Truong et al 2016	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	Non-random consecutive sample
Trung et al 2010	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random consecutive sampling
Van Be et al 1992	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	6	Non-random sampling, unclearly defined study populations, no baseline characteristics
Van Quang et al 2019	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random, retrospective sample
Viet et al 2012	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	Non-random sampling; non-representative (<i>potential</i> blood donors, HBV-vaccinated individuals excluded)
Zhang et al 2015	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8	Non-random sampling

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1 **Figure S1: study populations by location**



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6 **Table S6: Studies reporting HCV antibody and HCV antigen or HCV RNA in same population**

Study	Population	Proportion of HCV antibody positive individuals with HCV RNA or antigen	95% C.I.
Duong et al 2019	Dialysis	100%	[71.5 - 100]
Tanimoto et al 2010	PWID	79.30%	[74.4 – 83.6]
Kakumu et al 1998	Liver disease	60.90%	[48.3 – 72.4]
Le et al 2019	CSW	58.50%	[52.4 – 64.4]
Do et al 2015	General population	50.00%	[26.0 – 74.0]
Kakumu et al 1998	General population	44.40%	[13.70 - 78.8]

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Figure S2: estimated pooled HCV antibody prevalence in PWID by region

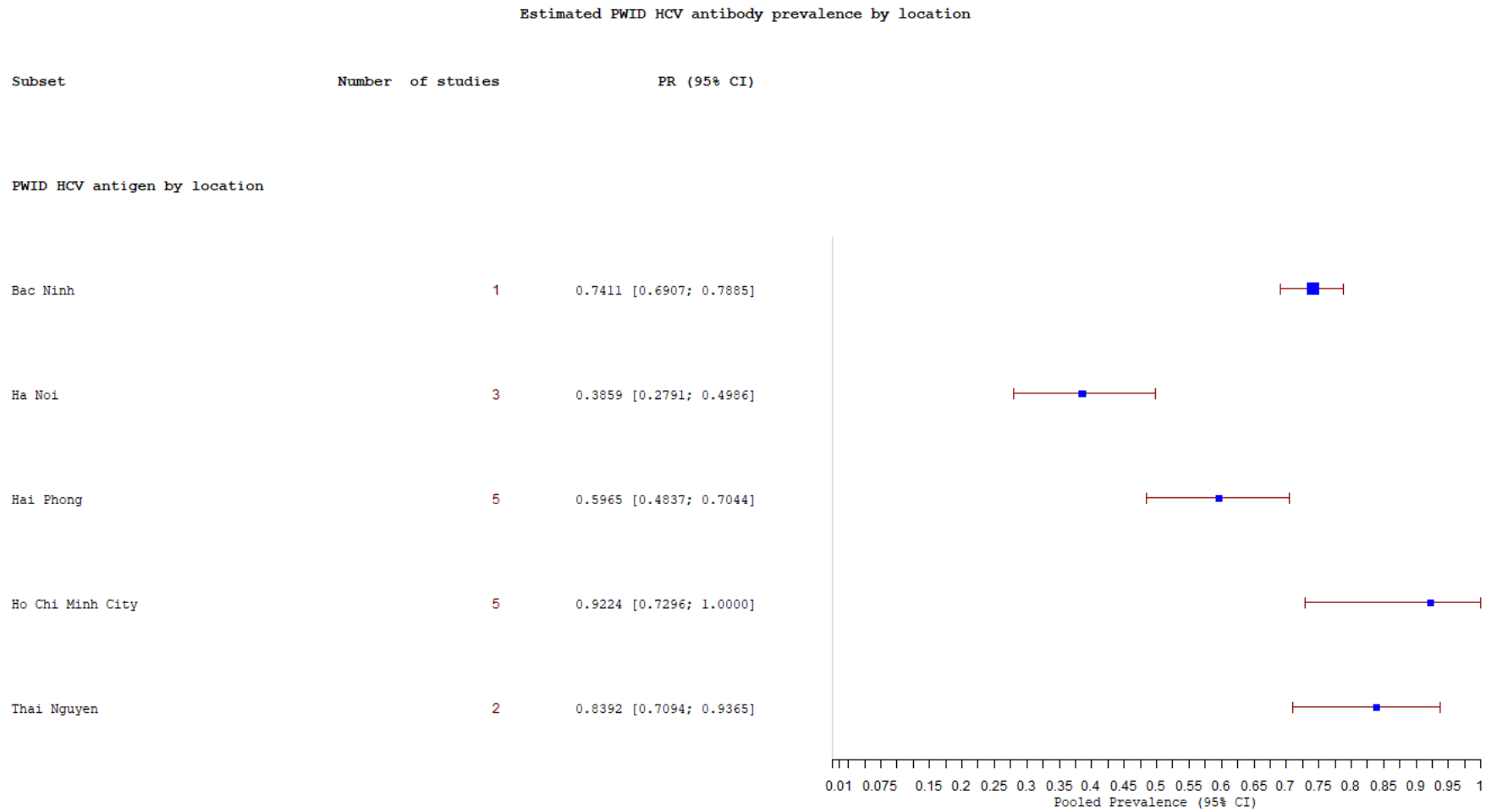
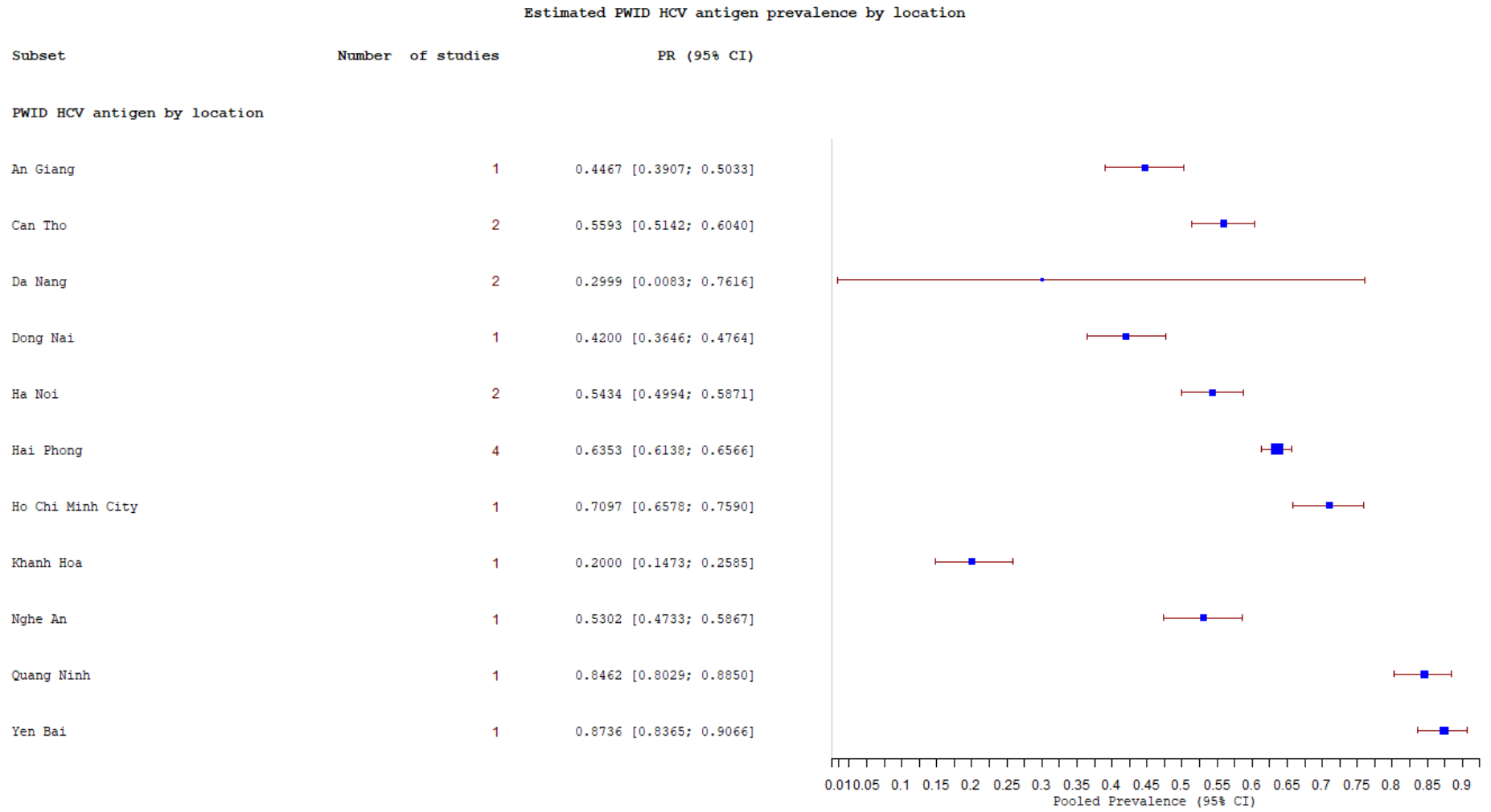


Figure S3: estimated pooled HCV antigen prevalence in PWID by region



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