

Prevalence of Hepatitis B (HBsAg) in Malaysia: Findings from the Malaysian Cohort Study

Mohd Hatta Bin Abdul Mutalip¹, Nor Asiah Muhamad², Rimah Melati Ab. Ghani², Eida Nurhadzira Muhammad¹, Hasmah Mohamad Haris¹, Rozainanee Mohd Zain³, Noraidatulakma Abdullah⁴, Muhammad Radzi Abu Hassan⁵

¹Center for Communicable Diseases Epidemiology Research, Institute for Public Health, National Institutes of Health, Ministry of Health Malaysia, 40170, Shah Alam, Malaysia, ²Evidence-based sector, National Institutes of Health, Ministry of Health Malaysia, 40170, Shah Alam, Malaysia, ³Institute for Medical Research, National Institutes of Health, Ministry of Health Malaysia, 40170, Shah Alam, Malaysia, ⁴UKM Medical Molecular Biology Institute (UMBI), UKM Medical Centre, 56000 Cheras, Kuala Lumpur, Malaysia, ⁵Hospital Sultanah Bahiyah, 05460, Alor Setar Kedah

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Introduction

- Globally, 1 in 10 of all people are living with Hepatitis B.
- Hepatitis B is still prevalent especially in less developing countries.
- The incidence rates of HBV infection in Malaysia were constant over the years and projected to continually increased until 2050.
- The study aimed to describe the prevalence of Hepatitis B surface antigen (HBsAg) among population from the Malaysian cohort and factors associated with HBsAg seropositivity.

Materials & Methods

- We utilized data and serum samples of subjects from the Malaysian Cohort (TMC).
- involving 1,458 participants aged 35 years old recruited between 2007 and 2012.
- Sample size was calculated using a single proportion formula for a prevalence study (Prevalence of 2.5%) with Neyman allocation for stratified sampling.

Variables used

1. Sociodemographic characteristics:

- Age
- Gender
- Ethnicity
- Marital status
- Education level
- Occupation
- State
- Locality

2. Risk factors:

- Immunization History
- History of chronic hepatitis
- Family history of hepatitis
- History of surgery
- History of blood transfusion

Serological testing for Hepatitis B

- 5 ml venous blood collected from each participant into a dry tube
- Blood samples were centrifuged at 3000 rpm for 10 mins at 4°C to separate the serum.
- Serum were aliquoted into cryotubes containing 500 microliters each and stored at -80 °C.
- Presence of hepatitis B surface antigen (HBsAg) were tested by chemiluminescence immunoassay (Roche Diagnostic, Germany) on the Cobas analyser.
- Equivocal results were retested using a sample from another cryotube of the same individual.
- Detection of HBsAg was considered indicative of chronic HBV infection.

Data Analysis

- Descriptive analysis including prevalence of Hepatitis B (HBsAg) was described by sociodemographic characteristics.
- Multivariate logistic regression was used to investigate associations between putative risk factors and seropositivity of HBsAg adjusting for other confounding factors.
- Final parameter estimates were obtained from the fitted multivariable model including all selected risk factors.
- Parameter estimates were expressed as odds ratios (OR) with 95% confidence interval (CI).

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Results

Table 1: The Malaysian Cohort's Participants characteristic (n=1458).

| Characteristics | n (%) | 95% CI |
|------------------------|--------------|-----------|
| Age group | | |
| ≤ 44 | 399 (27.37) | 25.2-29.8 |
| 45-54 | 624 (42.80) | 40.3-45.4 |
| 55-64 | 415 (28.46) | 26.1-30.8 |
| 65-70 | 20 (1.37) | 0.8-1.9 |
| Gender | | |
| Male | 718 (49.26) | 46.5-51.6 |
| Female | 740 (50.75) | 48.4-53.5 |
| Ethnicity | | |
| Malay | 588 (40.33) | 37.9-42.8 |
| Chinese | 513 (35.19) | 32.6-37.8 |
| Indians | 180 (12.35) | 10.6-14.1 |
| Bumiputera Sabah | 93 (6.38) | 5.2-7.7 |
| Bumiputera Sarawak | 53 (3.64) | 2.7-4.7 |
| Others | 31 (2.13) | 1.4-2.9 |
| Marital status | | |
| Single | 73 (5.01) | 4.0-6.3 |
| Married | 1300 (89.16) | 87.5-90.7 |
| Widow/Widower | 62 (4.25) | 3.3-5.4 |
| Separated | 5 (0.34) | 0.1-0.8 |
| Divorced | 18 (1.23) | 0.8-2.0 |
| Education level | | |
| No formal education | 25 (1.71) | 1.1-2.5 |
| Primary | 417 (28.60) | 26.3-31.0 |
| Secondary | 742 (50.89) | 48.3-53.4 |
| Tertiary | 274 (18.79) | 16.9-20.9 |
| Occupation | | |
| Unemployed | 500 (34.29) | 31.9-36.8 |
| Non-Government | 628 (43.07) | 40.5-45.6 |
| Government | 248 (17.01) | 15.2-19.0 |
| Self-employed | 82 (5.62) | 4.6-6.9 |

Table 2: Odds ratios, 95% confidence intervals and p-values from HBsAg in Malaysian adult population

| Characteristics | Crude OR (95% CI) | p | Adjusted OR ((5% CI) | p |
|-------------------------------------|--------------------|---------|----------------------|---------|
| Gender | | | | |
| Female (Ref) | 1 | | 1 | |
| Male | 1.89 (1.07, 3.34) | 0.029* | 2.04 (1.11, 3.75) | 0.021* |
| Race | | | | |
| Malay (Ref) | 1 | | 1 | |
| Chinese | 2.67 (1.34, 5.32) | 0.005* | 4.93 (2.16, 11.21) | <0.001* |
| Bumiputera Sabah | 5.78 (2.42, 13.81) | <0.001* | 4.57 (1.87, 11.17) | 0.001* |
| Bumiputera Sarawak | 3.92 (1.22, 12.61) | 0.022* | 3.86 (1.17, 12.79) | 0.027* |
| Locality | | | | |
| Urban (Ref) | 1 | | 1 | |
| Rural | 1.78 (1.02, 3.11) | 0.044* | 2.10 (1.02, 4.33) | 0.044* |
| Immunisation | | | | |
| No (Ref) | 1 | | 1 | |
| Hepatitis A | 1.26 (0.29, 5.36) | 0.758 | 1.25 (0.28, 5.52) | 0.769 |
| Hepatitis B | 0.42 (0.13, 1.35) | 0.143 | 0.34 (0.1, 1.15) | 0.082 |
| Hepatitis A and B | 0.64 (0.09, 4.79) | 0.668 | 0.5 (0.06, 3.87) | 0.507 |
| History of Surgery | | | | |
| No (Ref) | 1 | | 1 | |
| Yes | 1.09 (0.63, 1.9) | 0.749 | 1.26 (0.68, 2.33) | 0.456 |
| History of Blood Transfusion | | | | |
| No (Ref) | 1 | | 1 | |
| Yes | 1.79 (0.79, 4.06) | 0.163 | 2.41 (0.98, 5.91) | 0.054 |

Conclusion/ Discussion

- The prevalence of HBsAg in Malaysia was 3.64%.
- Early screening and testing could prevent the transmission in the family and community.
- Future research on social and behaviour risk factors could further reduce the number of Hepatitis infection in community.