

# The Knowledge Level of Primary Care Physicians in Surabaya Primary Health Care Center Concerning Hepatitis B

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## ABSTRACT

**Background:** One of physician's functions at primary health care center (PHC) is the ability to diagnose some diseases especially that contribute to high morbidity and mortality. Until now, hepatitis B virus infection has become a major health problem worldwide. The aim of this study was to identify the knowledge level of primary care physicians concerning hepatitis B in Surabaya.

**Method:** The present study was a cross-sectional study that performed by investigators through interviews with primary care physicians in Surabaya to fill questionnaires for measuring their knowledge level. The questionnaires were modified from questionnaire survey in Turkey performed by Peksen et al. It reflected the level of knowledge of the physicians including their comprehension, application and analysis. Validity and reliability test were performed on the result of those questionnaires. The knowledge level was categorized as follows: > 75 (excellent), 70.0–74.9 (very high), 65.0–69.9 (high), 60.0–64.9 (medium), 55.0–59.9 (moderate), 47.5–54.9 (nearly moderate), 40.0–47.4 (less moderate), < 40 (low).

**Results:** Based on validity test, we obtained 14 items of 17 question items with correlation coefficient 0.29–0.56 and alpha reliability index 0.64; therefore, the instrument can be used to measure the knowledge level. The results of mean score conversion included comprehension, which was  $84.88 \pm 16.50$  (excellent category); application, which was  $47.56 \pm 31.87$  (nearly moderate category) and analysis, which was  $14.63 \pm 35.56$  (low category). Statistically, the mean value of the knowledge level scale, which was the combination of comprehension, application and analysis, was obtained at  $49.02 \pm 19.09$  including the nearly moderate category.

**Conclusion:** By using a valid and reliable instrument, the knowledge level of primary care physician in Surabaya concerning hepatitis B can be categorized as nearly moderate.

**Keywords:** hepatitis B, liver cirrhosis, hepatoma

## INTRODUCTION

Over more than 400 million people worldwide have been identified having reactive HBsAg, which indicates that they have been infected by hepatitis B virus (HBV). It is found that 45% areas worldwide are endemic for HBV. In those endemic areas, the incidence rate ranges between 8–25%; while the

exposure rate based on positive anti-HBs found ranging between 60–85%. It has been identified that HBV causes 50 millions new contacts each year leading to the death of 1–2 million people.<sup>1,2,3,4</sup>

Primary care physicians are the most important personnel in community health service and one of their duties is to diagnose some diseases especially that contribute to quite high morbidity and mortality in the community, such as the hepatitis B. Therefore, a good knowledge concerning the disease is necessary. The knowledge level needed include comprehension, application and analysis. Such knowledge level is affected by some factors, e.g. experience in treating

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patients, source of information about the disease itself and physicians' interest to develop their knowledge and others.<sup>5,6,7</sup> Thus, primary care physicians are also expected to know about the route of transmission, risk factors, diagnosis, treatment and follow up of patients with hepatitis B since it often become chronic disease, which may lead to liver cirrhosis or even hepatoma.<sup>8,9,10</sup>

Until now, there has not been any data in Indonesia about the knowledge level of primary care physician concerning hepatitis B. This study was aimed to identify the knowledge level of primary care physician as the main spearhead of health care services in relation to HBV and therefore, we expect that both morbidity and mortality rate due to hepatitis B can be reduced.

## METHOD

This study was a qualitative descriptive analytical study using cross sectional design to measure the knowledge level of primary care physician in Surabaya city concerning hepatitis B by using questionnaire forms. The respondents of this study were all primary care physicians at primary health care center in Surabaya city who have been working at least a year. Survey was conducted in 2005 for 3 months period. The instrument used was adaptation/modification of questionnaire developed by Peksen et al in a study conducted in Turkey in 2002.<sup>11</sup> The questionnaire used consist of 3 sections, i.e. section I about demographical data; section II on factors affecting the knowledge level; section III about materials included in knowledge level such as some aspects of: (1) comprehension - the ability to interpret or find out the meaning of a phenomenon; (2) application - the ability to apply the relevant theory; (3) analysis -the ability to analyze problems in details.<sup>6,7</sup>

In section III, every correct answers will have one score and every wrong answer get 0 score. Validity test was measured by correlating the score of every item with total score of all items. On data of 17 items result and 82 participated primary care physicians, validity and reliability tests were conducted by using SPSS 14 for windows. There were 14 valid items with correlation coefficient between 0.29–0.56 (item number 5, 15 and 17 were invalid). Based on reliability test, the alpha reliability index was 0.6390, which indicated that the measurement tool was reliable. Afterward, such aspects were developed into measurement scale for knowledge level. To identify the knowledge level of the participants, the total raw score obtained from each item was converted in 0–100 scale. Such conversion scale was classified as follows: > 75 (excellent = A), 70.0–74.9 (very high = AB), 65.0–69.9 (high = B), 60.0–64.9 (medium = BC),

55.0–59.9 (moderate = C), 47.5–54.9 (nearly moderate = CD), 40.0–47.4 (less moderate = D), < 40 (low = E).<sup>6,7</sup>

## RESULTS

Of 82 doctors who participated in the study, 30 (36.58%) respondents were male and 52 (63.42%) respondents were female with range of age 23–58 years and mean age of 38.95 years. Most respondents were in the 26–30 years age group (26.83%). The duration of their practice as primary care physicians was between 1–27 years and the mean duration was 11.09 years with the longest duration between 1–5 years (43.90%). The following table is a recapitulation of questionnaire revealing demographic data, factors affecting the knowledge level on HBV including the source or information for the knowledge, the ability to make a diagnosis, number of patients treated and the knowledge of primary care physician regarding HBV.

The knowledge level of primary care physicians was based on the comprehension level of 10 items, i.e. item number 1, 2, 3, 4, 6, 7, 8, 9, 10 and 11 with a score scale of 1–100; and we found mean value of  $84.88 \pm 16.50$  (category A). Most subjects were at category A, i.e. 70 (85.36%) respondents. There were 8 (9.76%) respondents in category AB and 2 (2.44%) respondents in category BC and for category D and E, there was 1 (1.22%) respondent, respectively. Based on the application level with 3 items, i.e. item number 12, 13 and 14, we found mean value of  $47.56 \pm 31.87$  (category CD). Subjects with category A were 13 (15.85%) respondents. Subjects with category B were 23 (28.05%) respondents and the largest number of subjects was subjects with category E, i.e. 46 (56.10%) respondents. Based on the analysis level with 1 item, we found the mean value of  $14.63 \pm 35.56$  (category E). There were 12 (14.63%) respondents in category A and most subjects were at category E with 70 (85.36%) respondents.

The knowledge level based on combination of comprehension, application and analysis were categorized into 14 items with mean scale score of those aspects was divided by three. The minimal final score was 0 (low) and maximal 100 (excellent) with mean value of  $49.02 \pm 19.09$ , including category CD (nearly moderate). The knowledge score of all respondents demonstrated 9 (10.98%) respondents in category A; 1 (1.21%) respondents in category AB; 5 (6.10%) respondents in category B; 3 (3.66%) respondents in category BC; 7 (8.54%) respondents in category C; 9 (10.98%) respondents in category CD; 21 (25.61%) respondents in category D and the largest number was 27 (32.92%) respondents in category E.

**Table 1. Questionnaire form**

Please choose the most correct response based on your opinion by crossing the letters or by filling the blanks. Thank you for your kind concern and cooperation.

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I. Age : ..... years  
 Sex : a) Male b) Female  
 Duration of practice : ..... years

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II. A. Where do you get the newest information about hepatitis B? (you may answer more than one answers)  
 a) Journal  
 b) Symposium/congress  
 c) Textbook  
 d) Internet sites  
 e) Others, please mention .....

B. Based on your opinion, is it possible to establish the diagnosis of hepatitis B viral infection at the primary health care center? Please explain your reason!  
 a) Yes, .....  
 b) No, .....

C. Approximately, how many patients of hepatitis B viral infection either acute or chronic have you been diagnosed or followed up during your practice at the primary health care center?

D. Approximately, how many patients of hepatitis B viral infection either acute or chronic have you been diagnosed or followed up in the last 12 months?

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III. Please provide answer by giving circle on the letter F if you think the statement is "false" and T if it is "true"

1. T/F Blood and body fluid are not associated with the transmission of hepatitis B infection
2. T/F Organ transplantation is not associated with hepatitis B infection
3. T/F Contaminated food or water is not associated with the transmission of hepatitis B infection
4. T/F Sexual intercourse is not associated source with the transmission of hepatitis B infection
5. T/F Alternating household contact is not an etiologic factor in transmission of hepatitis B infection
6. T/F Using needle for administering intravenous drug is not an etiologic factor in transmission of hepatitis B infection
7. T/F Acupuncture, tattoo and wound resulting from contaminated sharp equipments is not an etiology in transmission of hepatitis B infection
8. T/F Stool is not an etiologic factor in transmission of hepatitis B infection
9. T/F Perinatal transmission is not an etiologic factor in transmission of hepatitis B infection
10. T/F Hemodialysis is not an etiologic factor in transmission of hepatitis B infection
11. T/F Insects is not an etiologic factor in transmission of hepatitis B infection

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**Analysis on case I**

12. Based on your opinion, what is the most correct suggestion to protect the newborn baby who was born by a mother with HbsAg+?  
 a) The newborn should have hepatitis B vaccine and immunoglobulin at some time after birth  
 b) The baby should be born by Caesar route  
 c) The newborn should have only immunoglobulin at birth  
 d) The newborn should have only hepatitis B vaccine at birth
13. A 35-year-old woman with chronic hepatitis B visits the primary health care center with normal serum level of alanin transaminase (ALT). What is your next step to follow up such case?  
 a) Clinical observation: ALT level  
 b) Clinical observation: refer when there is additional symptoms  
 c) Refer to a specialist
14. Which additional test would you recommend?  
 a) HBV DNA with polymerase chain reaction (PCR)  
 b) HBV genotyping  
 c) Liver biopsy conducted by experts

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**Analysis on case II**

15. A 40-years-old man with HbsAg+ had two times of examination during 3 years period. From his first laboratory result, the ALT level was 125 IU/L and the second revealed ALT level of 120 IU/L. What would you do next for this case?  
 a) Clinical observation: ALT level  
 b) Clinical observation: refer if there is any additional symptom  
 c) Referr to a specialist doctor
16. Which additional test would you recommend?  
 a) HBV DNA with PCR  
 b) HBV genotyping  
 c) Liver biopsy conducted by experts
17. If you would provide treatment, which drugs would you recommend?  
 a) Lamivudin  
 b) Interferon (IFN)- $\alpha$  + lamivudin  
 c) Interferon (IFN)- $\alpha$

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**Table 2. Demographic characteristics**

Characteristics	n (%)
Sex	
Male	30 (36.58)
Female	52 (63.42)
Age (years)	
21-30	25 (30.49)
31-40	17 (20.73)
41-50	31 (37.80)
51-60	9 (10.98)
Duration as health care workers (years)	
1-5	36 (43.90)
6-10	6 (7.32)
11-15	12 (14.63)
16-20	15 (18.29)
21-25	7 (8.54)
26-30	6 (7.32)

**Table 3. Factors affecting the knowledge regarding HBV**

Factors	n (%)
Information source concerning hepatitis B	
Scientific journal	30 (36.58)
Symposium/congress	67 (81.70)
Textbook	23 (28.05)
Internet sites	16 (19.51)
Other sources	7 (8.54)
Is it possible to diagnose HBV infection at primary health care center?	
Yes	25 (30.49)
No	57 (69.51)
The frequency of treating patients with HBV infection at primary health care center (patients)	
0	34 (41.46)
1-4	19 (23.17)
5-9	5 (6.10)
10-14	6 (7.32)
> 15	18 (21.95)
The frequency of treating patients with HBV infection in the last 12 months period (patients)	
0	38 (46.34)
1-4	30 (36.59)
5-9	7 (8.54)
10-14	4 (4.88)
> 15	3 (3.65)

**Table 4. The knowledge of respondents regarding HBV**

Response to questions	n (%)
Hepatitis B transmission	
Through blood and body fluid	79 (96.34)
Transplantation	78 (95.12)
Not by contaminated food or water	45 (54.88)
Sexual intercourse	75 (91.46)
Needle for intravenous drug	80 (97.56)
Acupuncture, tattoo or wound caused by contaminated sharp equipments	78 (95.12)
Stool is not an etiologic factor	48 (58.54)
Perinatal transmission	77 (93.90)
Hemodialysis	79 (96.34)
Insects is not an etiologic factor	57 (69.51)
Suggestion for newborn whose mother with HbsAg+: administration of HBV vaccine + immunoglobulin after birth	51 (62.20)
Follow up normal ALT level	28 (34.15)
Recommending HBV DNA test	38 (46.34)
Recommending liver biopsy for patients with HbsAg+ and elevated ALT level	12 (14.63)

**DISCUSSION**

There has not been any study in Indonesia on evaluation of the knowledge level of primary care physician concerning HBV infection. Study results of other countries about the knowledge level of primary care physician or health care worker evaluated the knowledge level concerning HBV infection only based on score percentage of each questionnaire item, but

did not calculate the total score of item by using mean score.<sup>11,12,13,14</sup> A study conducted on 2004 by Motamed et al was a pilot study which investigated the knowledge and practice toward universal precaution among health care workers and medical students in hospital. The status of patients with HBV or human immunodeficiency virus (HIV) in the study was unknown.<sup>15</sup> Moreover, a study by Ferrante et al

with family physician as the respondents found percentage result of each questionnaire item and it also evaluated the knowledge level based on mean knowledge score of each item group by performing data validation and reliability first. However, the aim of such study was not particularly evaluated the knowledge level of physician concerning HBV infection.<sup>16</sup>

The results of this study demonstrated that the duration of medical practice of primary care physician ranged between 1–27 years, with mean duration of practice  $11.09 \pm 8.66$  years. It was known that the longest duration of practice was between 1–5 years with 36 (43.90%) respondents. A study in Nepal by Gurubacharya et al measured the knowledge level of hospital workers when they got needle injuries concerning HBV infection, hepatitis C viral (HCV) infection and HIV. It found that most respondents had been worked less than 5 years with 77% respondents.<sup>12</sup> A study in Turkey by Peksen et al which investigated the knowledge, behavior and understanding of physicians regarding HBV and HCV infection found mean duration of practice of  $7.2 \pm 4.6$  years.<sup>11</sup> A study result in USA which evaluated the knowledge concerning risk factor, screening, counseling on HCV, HBV infection and hepatocellular carcinoma indicated that most physicians had been practiced between 10–20 years, with 28.5% respondents. The number of physicians who had practiced < 5 years only slightly less number, i.e. 27.6%.<sup>16</sup> Furthermore, a study by Samuel et al in Nigeria which aimed to determine the knowledge of health care worker, as well as their behavior and attitude concerning HBV infection, also found that the duration of working was mostly less than 10 years with 65% respondents.<sup>13</sup>

Concerning the source of newest information on HBV infection, in this study found that 67 (81.70%) respondents had the information from symposium or congress; followed by 30 (36.58%) who found the information from scientific journal; 23 (28.05%) respondents found it on textbook; 16 (19.51%) respondents found it from internet sites and from other source of information only 7 (8.54%) respondents. A study result by Peksen et al found that the largest source information of HBV was textbook, i.e. 79.1%, which descriptively higher than this study result. It may be caused by lesser reading desire and book facilities in our country. Moreover, the study indicated that respondents who gave response that they found information about HBV infection by journal was 63.6%, by congress was 14%, and by online sites only 3.1%.<sup>11</sup> In this study found that 57 (69.51%) respondents claimed that they could not make diagnosis of HBV infection due to limited diagnostic facilities. For the same reason, study results by Peksen

et al also indicated high percentage, i.e. 83.7% respondents could not establish the diagnosis of HBV infection.<sup>11</sup>

In this study found that 34 (41.46%) respondents have never treated patients with HBV infection; 19 (23.17%) respondents have treated 1–4 patients; 5 (6.10%) respondents have treated 5–9 patients; 6 (7.32%) respondents have treated 10–14 patients and 18 (21.95%) respondents have treated >15 patients with HBV infection. Such result was descriptively lower than study results conducted by Peksen et al with 34.88% respondents during their practice may examine 52 patients with HBV infection and only 4.65% physicians who examine one patient or more.<sup>11</sup> Experience in treating numerous patients may affect the knowledge level of physician as indicated by a study result in USA, i.e. the physician who had diagnose more than 6 cases each year will have higher knowledge about the risk factors of HBV infection compared to physicians who only had 5 cases or less each year (mean knowledge score 8.0 vs. 6.8;  $p = 0.02$ ).<sup>16</sup> For the last 12 months period, in this study found that most respondents who had never examine patients with HBV was 38 (46.34%). In Turkey, respondents who did not get hospitalized patients with acute hepatitis B 85.3%; while 65.1% did not find patients with chronic hepatitis B.<sup>11</sup> Hence, it descriptively demonstrates that the number of physicians in this study who had never examine patients with HBV infection both acute or chronic was lesser than the study result by Peksen et al. It may result since this study examined not only hospitalized patients in the last 12 months period.

The study result concerning the measurement of knowledge level of primary care physician regarding HBV infection associated with its transmission suggests that 79 (96.34%) respondents claimed that the transmission is associated with blood and body fluid and 78 (95.12%) respondents claimed that it is associated with organ transplantation. A study result by Samuel et al found that 92% respondents noticed blood and the blood product.<sup>13</sup> Moreover, a study result by Peksen et al indicated 95.3% respondents claimed blood transfusion as route of transmission, as well as blood and body fluid in 94.6%.<sup>11</sup> Respondents who claimed factor transmission not by contaminated food and water were 45 (54.88%) subjects, 48 (58.54%) respondents claimed that the transmission is not by stool and 57 (69.51%) respondents claimed the transmission as not by insects. Descriptively, the result is lower than a study in Nigeria, i.e. non-faeco-oral transmission in 85.8% respondents and not by contaminated water by 90.7% respondents.<sup>13</sup> Therefore, we need to encourage endeavors to enhance knowledge on such item. In this study

indicated knowledge about transmission associated with sexual intercourse in 75 (91.46%) respondents. A study in Turkey found knowledge on sexual transmission in 89.9% respondents; while in Nigeria, it was only 37%.<sup>11,13</sup> Our study indicated that 80 (97.56%) respondents claimed transmission associated with using needles for administering intravenous drugs; 78 (95.12%) respondents claimed that it is associated with acupuncture, tattoo, and wound by contaminated sharp equipments. Furthermore, in Turkey transmission associated with intravenous drug use was claimed by 90.7% respondents. While in Nigeria, 68.5% respondents claimed that it is associated with needle and sharp equipments.<sup>11,13</sup> Perinatal transmission was claimed by 77 (93.90%) respondents and transmission by hemodialysis was claimed by 79 (96.34%) respondents in this study. While in Turkey, they found vertical transmission claimed by 80.8% respondents.<sup>11</sup> A study result by Chao et al on knowledge of primary care physician concerning HBV infection and liver cancer found that 34% respondents did not know about the transmission of HBV infection.<sup>14</sup>

Concerning the most appropriate suggestion to protect the newborn with HbsAg+ mother, in this study found that 51 (62.20%) respondents claimed that the newborn should be injected by hepatitis B vaccine and immunoglobulin at some time after birth. Similar result was also found by Peksen et al that most respondents (83.7%) have know the approach recommendation for the newborn with positive HbsAg mother.<sup>11</sup> In Nigeria, Samuel et al found that the prevention of hepatitis B infection and the prompt preventive measures including vaccination have also been claimed the majority of respondents (77.2%).<sup>13</sup> A study by Chao et al found that 70% respondents have known the importance of hepatitis B vaccine to prevent the liver disease.<sup>14</sup>

Analysis on case I found that 28 (34.15%) respondents performed the follow-up by clinical observation through examination of ALT level. In contrast, no respondents had follow up by examining ALT level.<sup>11</sup> For the abovementioned case analysis, it is found that 38 (46.34%) respondents recommended to have additional test of HBV DNA with polymerase chain reaction (PCR). A study by Ferrante et al found that 79% respondents have known the next treatment plan or which should be consulted to the experts after the patients have been recognized with positive HBs Ag positif.<sup>16</sup> Analysis on case II reveals that there was only 12 (14.63%) respondents who recommend liver biopsy test to experts. A study by Peksen et al on examination of liver biopsy was recommended by 34.1% respondents.<sup>11</sup>

In this study found that the mean value of knowledge level of primary care physician based on

their comprehension level was  $84.88 \pm 16.50$  (excellent). Based on the application level, we found the mean value of  $47.56 \pm 31.87$  (nearly moderate). Based on the analysis level, we found mean value of  $14.63 \pm 35.56$  (low). The best category was comprehension (A), followed by application (CD) and the worst was analysis (E). For knowledge level based on combination of comprehension, application and analysis, we found mean value of  $49.02 \pm 19.09$  (nearly moderate). Such value indicates that the knowledge level of respondents is still low; therefore, efforts to enhance knowledge should be encouraged considering that the primary care physicians are the spearhead in treating the disease in community. In addition, a study result by Motamed et al in Iran found that the mean knowledge score of screening HBV in hospital A staff was 7.34, hospital B staff was 8.63 and medical students was 7.81 (with a scale score 0-10).<sup>15</sup> A study by Ferrante in USA found the mean knowledge score for screening for HBV was 7.1 (SD = 1.7; 79% correct), 24% with score 9 (100% correct), 32% with score 6 or less (67% correct); with mean knowledge score of 8.0 compared to 6.8 and  $p = 0.02$ .<sup>16</sup>

## CONCLUSION

Based on results in this study, the majority of respondents have their newest information about HBV infection through symposium or congress. Most respondents claim that during their practice as primary care physician they have never had treated patients with hepatitis B viral infection. While on comprehension level, all respondents have A score or excellent category. On application level, they have CD score or nearly moderate category and for analysis, they have E score or low category. Statistically, the knowledge level of all respondents based on the mean value of scale score is at CD score with a nearly moderate category.

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